

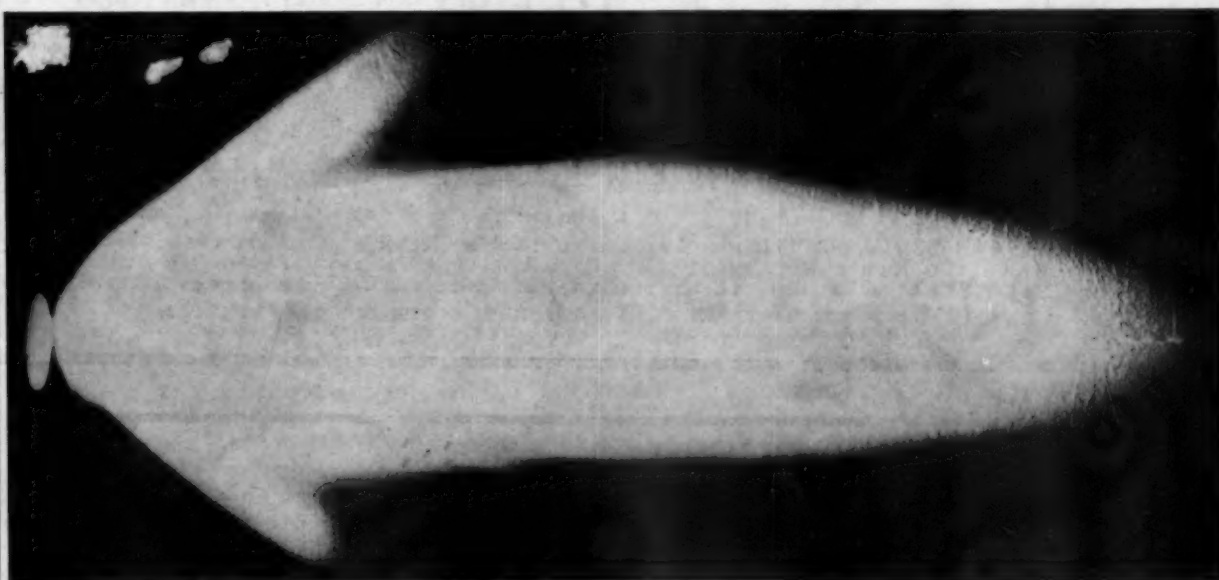
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# THE AUTOMOBILE

WEEKLY

NEW YORK—THURSDAY, APRIL 18, 1907—CHICAGO

10 CENTS



## Why You Secure Double Lighting Efficiency from GRAY & DAVIS LAMPS



- ¶ The above illustration is from a direct photograph made by Professor Louis Derr, of the Massachusetts Institute of Technology, showing the light rays from a single Gray & Davis No. 61 headlight.
- ¶ It shows the remarkable combination of the "fan" and "pencil" rays, the unique feature of these lamps—a combination giving in a single lamp the long-distance "searchlight" ray and the "fan" ray for nearby illumination.
- ¶ It is this valuable characteristic of Gray & Davis lamps which doubles their efficiency—and halves the first cost of your lighting equipment.
- ¶ And this is only one of the reasons why Gray & Davis lamps are to-day the recognized standard of the world in every point of efficiency, durability and workmanship.

*Guaranteed unqualifiedly by their makers*

GRAY & DAVIS,

Amesbury, Mass.



Planning the Trip.

## Road Books and Maps

are being studied now by automobile owners who will tour more or less this summer.

A good many things to be thought of.

One thing especially: **Pneumatic Tires** that will not only carry the load, but are fortified absolutely against side-slips.

**Hartford Dunlops with Midgley Tread for good service, satisfaction and safety.**

Better be a month early than an hour late with your order!

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## Rush Orders

Are unsatisfactory. Regardless of this fact many manufacturers wait until the last minute before placing orders and then expect quick delivery and high grade work.

It is now time to place orders for LIMOUSINE and LANDAULET BODIES for Fall Delivery.

We are the largest builders of this type of body in the country. We can furnish WOOD or ALUMINUM.

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# THE AUTOMOBILE



THOUGH of exceeding interest as a whole, it is doubtless in the elaborate provision made for storing and handling cars that the attention of the autoist and club member will be centered in the new building of the Automobile Club of America, which is located on Fifty-fourth street between Broadway and Eighth avenue, New York City. True, no effort has been spared to make the club and social features prominent, and every facility known to the up-to-date establishment of the kind has been provided, but then there are many elaborate clubhouses in the metropolis, and but one that is at the same time a club and a garage. It is hardly necessary to state that in designing the arrangements for both housing and taking care of the cars nothing was left to chance or experiment. Every system extant prior to the time the building was started was studied and advantage taken of the knowledge gained to avoid errors.

Starting at the ground floor, there is a large entrance for the cars, and a similar exit, at each of which there is stationed a checker who records the movements of every car kept in the building. These two entrances are situated between the members' entrance at the Broadway end and the employees' entrance at the opposite extreme. Passing through the entrance for cars one finds himself in a spacious room with a capacity of 50 to 70 cars and which is intended principally for temporary storage; that is, cars in use which are to go out again shortly. There is a washing stand on this floor, also a turntable facing the two huge electric elevators, so that the cars may be run on the latter according to the direction it is desired they should face when coming off on the upper floors.

The street floor also contains a large members' locker room and the office of the superintendent of the building.

#### Gasoline and Oil Used on But Two Floors.

Though every portion of the construction of the building is fireproof, barring the wood trim in the social end of it, neither gasoline nor oil will be handled except on the street floor and the top floor which houses the repair shop. They have been finished with a special hard-glazed material which, beside being fireproof, is also said to absolutely resist oils and gasoline. Fuel storage is provided for in the sidewalk vaults in the shape of a number of small tanks in order to comply with the regulations of the Bureau of Combustibles. They are filled by pipes terminating at the curb line, cars being replenished on the street floor by measuring pumps delivering exactly a gallon per stroke. The elevators, which have a platform measuring 10 by 18 feet, are also floored with same non-absorbent glazed material and have iron sides. Automatically locking gates are provided, the control preventing the gate from being opened except when the elevator is in place and also preventing the latter from starting until the gate is closed.



ONE OF THE HUGE ELECTRIC ELEVATORS.

Four entire floors are devoted to the storage of cars and provision has been made on each for the use of movable iron partitions for those of the club members who wish to keep their cars in locked "stalls." The roof has been designed to bear the weight of a number of cars and the elevators run to this level, so that in case of emergency it can be utilized temporarily for storage purposes. Both the elevators and the



MAIN ENTRANCE TO THE NEW CLUB HOUSE.

stairways are separated from the remainder of the building by a substantial fire wall and automatic metal doors on each floor.

#### Complete Modern Repair Shop.

As the building is designed to house several hundred cars permanently, it is only natural that most complete facilities for taking care of every kind of repairing have been installed. As already mentioned, the repair shop is located on the top floor, which is entirely given over to it. Here will be placed a complete outfit of electrically driven machine tools, the department being in charge of an expert worker under whose supervision all machine work will be done. This part of the shop is separated from the remainder of the floor by a wire partition. In this open space chauffeurs may dismount and repair their cars, passing all parts requiring machine work through a wicket to the latter department, to which they will not be admitted. To a very large extent the front and rear walls of each floor are composed of fireproof wire glass windows, and this is particularly true of the repair shop, which is lighted by a skylight in addition.

The club's dynamometer will also be installed on this floor with every facility for measuring the output, efficiency and fuel consumption of any make of car, beside conducting other tests of an interesting nature. A great deal of attention has been devoted to this feature by the Technical Committee of the club and it is expected to be of considerable interest not alone to members, but to autoists generally, as it is planned to do considerable testing work here. The building is to have its own lighting service, turbo-generator sets being employed to generate the current with accumulators both as an emergency, as no provision has been made for the use of illuminating gas in the building, and to carry the entire load when not much current is needed.

#### Construction of the Building.

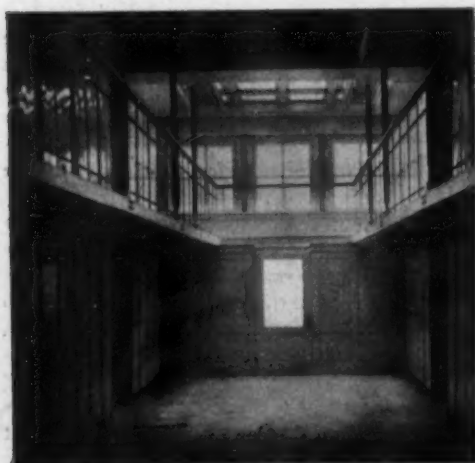
As will be evident from the photograph illustrating the façade of the building, no attempt has been made at ornamentation above the main or clubroom floor, general utility and adequate lighting having been the aim rather than architectural features. The construction in general is of reinforced concrete, and every effort has been made to render the building fireproof throughout. With a view to preventing the rapid spread of a fire in case it should originate on one of the storage floors, all the columns are provided with hooks from which will depend round-bottomed buckets of sand in addition to the usual chemical fire extinguishers. A number of these columns are also wired to the electric lighting service and have counter-sunk attachment receptacles for the convenient connection of hand lights and flexible cords to render inspection of the cars easy.

The building is eight stories high and the materials used in its construction are marble, Indiana limestone, white brick and terra-cotta, the latter being employed in two colors for the ornamentation over the window arches on the main floor.

COLGATE HOYT,  
President of A. C. A.

#### Social Features Have Not Been Sacrificed.

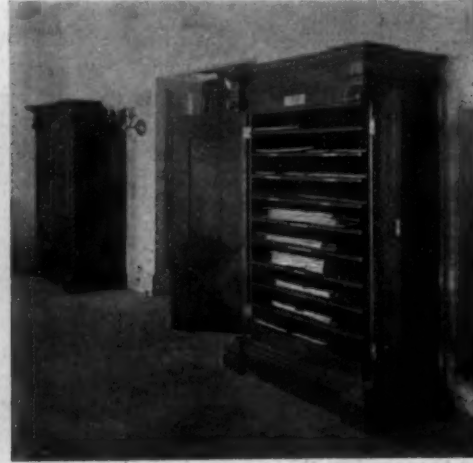
Though such painstaking attention has been devoted to the housing of the cars and such a tremendous amount of space is given over to them, the purely social end of the club has not been overlooked by any means. The main entrance at the Broadway end of the building opens into a corridor twenty-five feet wide, terminating in a grand staircase leading to the second floor. Under the landing of this stairway is located a ladies' waiting room, lighted by a large dome skylight; it is provided with all conveniences and elaborately furnished. At the head of these stairs is the main assembly room rising through two floors. It is finished in the Renaissance style with a beam ceiling patterned after that of the famous chateau of Cheverney. This room is separated from the grill room, which is capable of seating 300 people, by six sliding doors, so that the two may be thrown together. Adjoining the grill is the governors' room, and beyond that the bar, serving room and kitchen, each of which is fitted with modern appliances throughout. A mezzanine floor accommodates the secretary's office and a billiard room, the remainder of it being given over to garage space. On each of the storage floors there is a special room for chauffeurs. Though the new



MEMBERS' LOCKER ROOM ON GROUND FLOOR.



DIRECTORS' ROOM ON CLUB FLOOR.



TOURING BOARD'S ELABORATE MAP SYSTEM.





ONE OF THE FOUR GARAGE FLOORS WITH THEIR MANY WINDOWS.

club building has actually been in service for the past week or two, it was not formally opened until to-day, the 18th inst.

In view of the tremendous growth of the Automobile Club of America, a brief résumé of its history will be of interest. As the result of a conference between two autoists, Whitney Lyon and George F. Chamberlain, a call for a public meeting at the Waldorf on June 7, 1899, was published generally. The call for the meeting contained the following statement:

"In view of the rapidly increasing number of self-propelled pleasure vehicles in this country and the widespread interest in the subject, and the almost certain use of the automobile as a form of sport in the United States and the difficulty of procuring proper storage and care for the vehicles, it has been thought desirable to call this meeting of owners or intended owners for a conference looking towards the formation of a club."

At this meeting George F. Chamberlain was elected chairman and Capt. Homer W. Hedge secretary. Mr. Lyon briefly ex-

plained the purposes of the meeting and the intense opposition and hostility to the automobile which was being everywhere

shown. There were about thirty present at this meeting. A committee was elected to draft a constitution and by-laws. On August 16, 1899, a charter was procured under New York laws and the club duly incorporated. At the meeting held on October 16, 1899, a constitution and by-laws were adopted, and the following were chosen officers: Acting-president, George F. Chamberlain; treasurer, V. Everitt Macy; secretary, Homer W. Hedge. Official recognition as the national automobile club of America was promptly received from the clubs of Great Britain and France. Temporary quarters were engaged at the

Waldorf and the real work of the club commenced. The purposes and objects of the club are set forth in the charter and are as follows:

The objects of this corporation are the promotion of a social organization or club composed in whole or in part of persons owning



SECY BUTLER, TO WHOM THE CLUB OWES MUCH.



THE MAIN ASSEMBLY HALL, DESIGNED AFTER A FAMOUS FRENCH CHATEAU.



THE LADIES' ROOM UNDER THE STAIRCASE.

self-propelled pleasure vehicles for personal or private use. To afford a means of recording the experience of members and others using motor vehicles or automobiles. To promote original investigation in and development of motor carriages. To co-operate in securing rational legislation and the formation of proper rules and regulations governing the use of automobiles in city and country and to protect the interests of owners and users of automobiles against unjust or unreasonable legislation and to maintain the lawful rights and privileges of owners and users of all self-propelled pleasure vehicles. The encouragement and development in this country of the automobile. To promote and encourage in all ways the construction and maintenance of good roads and the improvement of existing highways, etc.

November 4, 1899, was a famous day in the annals of the club, for then occurred the first public parade of automobiles ever held in the United States. Thousands of spectators blocked Fifth avenue when thirty-four cars, headed by a band, started for Riverside Drive. The line of the route was thronged; the course turned west at 110th street and a few were unable to ascend the grade and dropped out.

The next club run took place January 27, 1900, and was to Kingsland Point, north of Tarrytown. Ten automobiles propelled by steam and three by gasoline made the start; eight in all survived.

The first annual banquet of the club was held at the Waldorf April 2, 1900, about 100 members being present, and addresses were made by Major-General Nelson A. Miles, ex-Mayor W. L. Strong and others.

The first road race promoted by the club took place on Long Island over a course of 50 miles on April 14, 1900. There were ten entries for a cup presented by Leonce Blanchet, of the Automobile Club of France. The race was won by A. L. Riker in a



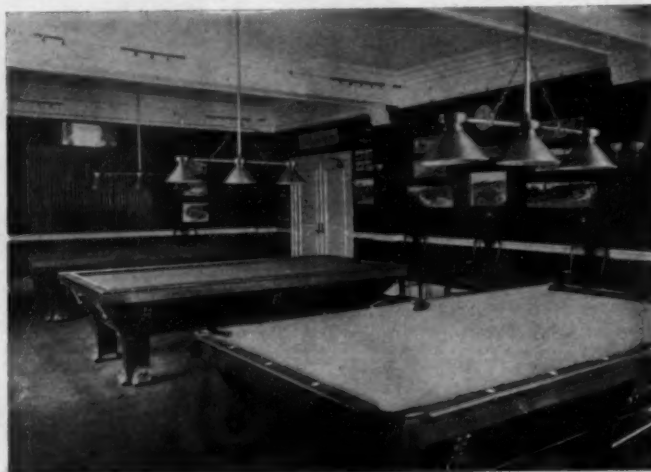
THE GRILL ROOM, WHICH ACCOMMODATES 300 PEOPLE.

specially constructed electric in 2:3:30. The first long-distance race was from New York to Philadelphia, June 2, 1900; 20 cars took part and 16 finished. The start was made from New York at 7:30 A. M., stopping at Princeton, N. J., for lunch; the first car reached Philadelphia at 7:20 P. M., the distance being 117 miles.

Albert R. Shattuck was elected president at the first annual meeting held October 20, 1900, the club then having a membership of 260. The years 1901, 1902 and 1903 were periods of great activity in club affairs. On November 17, 1903, 454 members were enrolled.

The first annual exhibition was held in the Garden on November 3, 1900, with 66 exhibitors, increasing to 176 cars in 1901, 227 in 1903, 258 in 1904, and 290 in 1905, all these shows being held in the same place. In 1906, on January 13, the sixth annual show was held in the 69th Regiment Armory, but as makers were limited to one type of car, only 247 were exhibited.

On September 9, 1901, there was held the first long-endurance run, over a course of 500 miles from New York to Buffalo. Eighty cars started and 44 reached Rochester September 13, when the test was abandoned by reason of the assassination of President McKinley. May 13, 1902, a 100-mile non-stop run was held from New York to Southport, Conn. Fifty-five cars started, 44 finished and 28 made an absolute non-stop run. October 9-15, 1903, a reliability contest was held from New York to Boston and return,



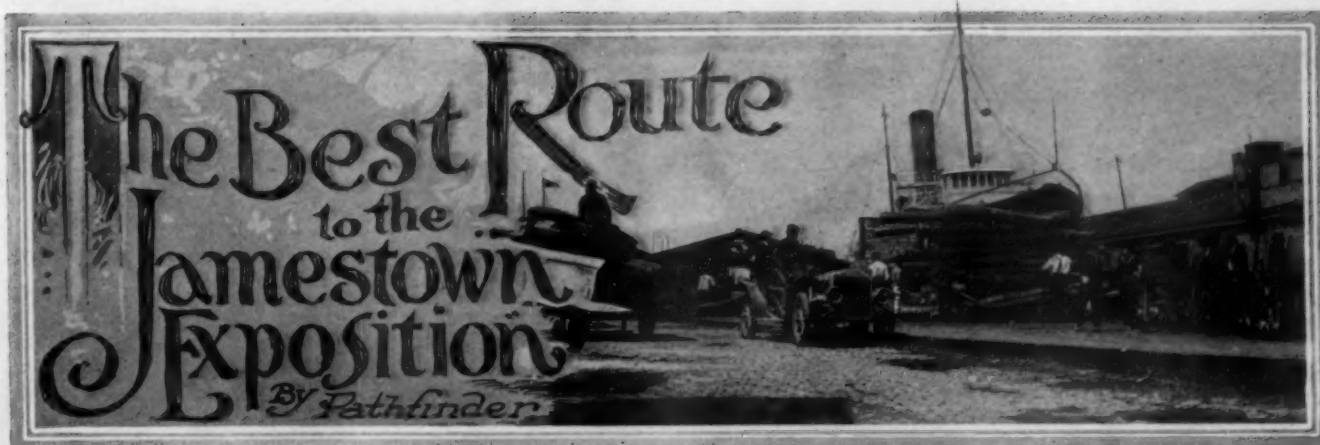
A CORNER OF THE MEMBERS' BILLIARD ROOM.

a distance of 490 miles; 75 cars started October 9 and 68 finished in New York, October 15, within the time limit. May 20-21, 1903, the first commercial vehicle contest took place over 40 miles of city streets. The first day 11 vehicles started and 9 finished; the second 9 started and 7 finished.

On the retirement of Mr. Shattuck in 1903 Winthrop E. Scarrit was unanimously elected; in 1904 the club had 589 members. Dave H. Morris succeeded Mr. Scarrit as president. The club's membership in 1905 was 1,079, and is now over 1,250. In May, 1905, it was resolved to build the clubhouse. The building committee consisted of Colgate Hoyt, chairman; Dr. Schuyler S. Wheeler, and A. R. Shattuck. The land was purchased the same month for \$210,000 and the building cost about \$350,000.

Starting a little more than a year ago, the club established a touring bureau, and after considerable search for a man able to fill the unusual requirements, it was placed in charge of A. L. Westgard, than whom few are better fitted for the post, as he has probably made more road maps than any other man in the country. About \$5,000 was expended in the organization of the bureau, and it is expected that \$5,000 to \$7,000 will be appropriated each year to carry it on. Up to date fifteen special maps have been published, covering New Jersey, Long Island, the Hudson river district, Connecticut, Massachusetts and upper New York State, besides an index to the maps and route cards. Supplementing these, Mr. Westgard has gathered a comprehensive collection of foreign touring maps.





TO the many autoists who are contemplating a visit to the Jamestown Exposition it will be welcome news that there is a practical touring route of but 340 miles between New York and Norfolk. By "practical" I mean not that there is a fine macadam road all the way, but that the route is of such a character that a sturdy touring car should be able to negotiate the trip without difficulty. Recently, while looking into the railroad routes to Norfolk, I noted that by far the shortest was by way of Philadelphia, Wilmington, and Dover, Del., and thence through the "Eastern Shore counties" of Maryland and East Virginia to Cape Charles, from which point the balance of the trip to Norfolk is made by boat. It occurred to me that it would be entirely practical to go this way by automobile, and, finding no information on this route in touring literature, I determined to go and find out. Then I could tell the crowd how to go.

From New York our first day's trip was to Philadelphia, following the beaten touring route by way of Staten Island, New Brunswick, Trenton, and Burlington. Leaving Philadelphia, the next day, by way of South Broad street, we followed the trolley line to Chester over an excellent macadam road which is built over the marshes. From Chester we found a very fair road to Wilmington, Del., the last few miles being over a toll road. Wilmington is twenty-nine miles from Philadelphia, and, throughout this distance, the road skirts quite closely the Delaware River. Leaving Wilmington we were in practically unknown country. We were confident that, whatever might be the condition of the roads, our White steamer would carry us to the destination, but we were by no means sure that the tour would be such that we could recommend it. The event proved, however, that the trip from Philadelphia to Cape Charles may readily be made in three days, and if a man cares more for speed than for scenery this might be reduced to two days. But 'tis better to take time and enjoy yourself.

We had not gone far from Wilmington when we encountered a type of road which prevails the greater part of the route, namely, heavy sand of a kind which does not pack in any kind of weather, no matter how heavy the traffic may be. The farmers' buggies and wagons, all traveling in one track, have worn deep ruts in the roads, but if these are "straddled" the road can be covered at a very fair average speed. The ruts wind aimlessly from one side of the road to the other, and the man at the wheel has his work cut out for him, and, sometimes, 'tis hard, too.

The country is absolutely flat, and yet is by no means monoto-

nous. About twenty miles south of Wilmington we had a genuine scenic surprise, where the road crosses the Chesapeake and Delaware canal. The high banks of the canal rise precipitously from the narrow strip of water which flows lazily on its way from Chesapeake Bay to Delaware Bay. The accompanying photograph better than paragraphs of description conveys an idea of this interesting spot.

We did not need to be told that the automobile was still a novelty all through that region—the action of the horses convinced us that few machines had been there before us. Fortunately, in that part of the country there are practically no fences. The fields are cultivated right up to the edges of the road, just as they are in France. Accordingly, when a horseman would see us approach he would drive off the road into the fields, and, when we had passed, "turn around and drive right back again." We had many such incidents.

Practically all of Delaware is under cultivation, and, as this is the season of the year for plowing and sowing, we saw agricultural activity on every side. Although winter had not yet spent its force in New York, we saw many orchards of peach trees in blossom and the meadows were a verdant green.

When we got south of Dover we encountered a condition which reminded me strongly of some of the Western States. The highway was no longer straight or approximately so, but would occasionally turn east for a mile or so, then abruptly turn south again, and then, for no apparent reason, lead due west for a while. Thus we covered a considerably greater distance than do the crows on their way north and south. In general, we could take our directions from the telegraph wires; but even this guide sometimes failed us, for the wires often leave the main highway to enter some town several miles to the east or the west. Occasional inquiry from the inhabitants is a safe plan.

When approaching Seaford, the largest town in southern Delaware, we came to a 12-mile stretch of shell road. Further south we encountered this same style of road, at intervals which were all too rare, but sufficient to give us an opportunity to learn the advantages of this type of road construction. The shell road is absolutely smooth, drains readily, gives very good traction, and is comparatively dustless. The shell road is very easy to build, and we thought what a world of benefit a vigorous good roads campaign might be for the State. To make a shell road all that is necessary is to dump the shells on the road bed, distribute them evenly



WHERE WATER OVERFLOWED THE ROAD AT CHESTER, PA.



WE STOPPED TO GIVE A GREEN HORSE A LOOK.

to the depth of a few inches—and the traffic nicely does the rest. There is an inexhaustible supply of the raw material for shell roads right at hand. Chesapeake Bay is the natural habitat of the oyster and the vast oyster canning factories, which have long comprised one of the principal industries of the region, turn out the shells by the million as a by-product. We wondered why every mile of road on the peninsula was not covered with shells long ago, until we learned that the shells are in demand to be turned into lime for use as a fertilizer.

We spent the night at Seaford, 115 miles from Philadelphia, and although we fared quite well at the Sussex Hotel there, we later learned that a better schedule, as regards the first night's stopping place, was possible and more convenient.

The next morning we again had a few miles of shell road, but this did not last long, and we were soon plowing through the sand once more. Fifteen miles out we passed near the town of Delmar, which, as the name suggests, is on the border between the States of Delaware and Maryland. Here we buckled on our Maryland license pads, meanwhile breathing a pious prayer that Chairman Terry's national license bill might soon be on the statute books. I should have said before that the motor vehicle law of Delaware permits non-residents to remain in the State for forty-eight hours without undergoing any license formalities. This is a liberal provision which certain other States would do well to copy.

The character of the country changed somewhat as we proceeded down through Maryland, and the road frequently led through woodlands, covered with fine second-growth pine trees. Some lumbering was going on, and we occasionally passed saw-mills. We noted the peculiar style of vehicles for carrying logs—a two-wheeled affair drawn by a pair of oxen and a horse. We could not fathom the reason for this strange combination, al-



YOUNG AMERICA AND SCHOOLHOUSE, LAUREL, DEL.

though one of our party suggested that the oxen were for power and the horse for speed; in other words, a low-gear and high-gear combination. On reaching the town of Princess Anne at noon-time we were directed to the Hotel Washington, and here we had one of the surprises of our tour. The hotel impressed us favorably from the exterior. It was built in pure Colonial style, yet looked very modern, in striking contrast to the

hotels we had seen en route. We were ushered into a dining-room, every feature of which was prepossessing. Let me enumerate some of the articles on the bill of fare which I remember. Oysters—right out of the bay; fish—ditto; chicken—the kind you read about; asparagus—melt in your mouth, etc., etc. Served by Japanese waiters! And the price 50 cents!! We had to rub our eyes and pinch ourselves to make sure we were not dreaming.

Tearing ourselves reluctantly from this oasis we continued on our way, and after covering fifteen miles of zig-zag roads, such as I have already described, we came to a town having the euphonious title of Pocomoke City. South of this place we crossed into Virginia, and once more had to hang out another license number!

Accomac was the next town of any size, and then we began to think where we should spend the night. We brushed by the hotel at Tasley, and shuddered when we saw the accommodations that Onley had to offer. Finally we deter-

mined to spend the night at Onancock. This place was eighty-four miles from Seaford, where we had spent the previous night, and the reduced mileage for the day probably fairly reflects the less favorable character of the going.

We were glad to leave the hotel at Onancock early in the morning and proceeded southward through the unimportant towns of Keller (where the Standard Oil Company has a supply



CHESAPEAKE AND DELAWARE CANAL.



ANCIENT TOLL GATHERERS AT POST OF DUTY.



A TWO-WHEELER OUTFIT HAD ITS "PICTUR TOOK."





IN OLD VIRGINIA'S WOODED COUNTRY.

accommodations, the first day's trip from Philadelphia should be terminated at Dover, twenty-six miles out. The Hotel Richardson in this city has a good reputation and looks good from the outside, although we did not have any personal experience with the place. The second day's trip is another comparatively short jaunt of seventy-seven miles to the Hotel Washington, Princess Anne, which has already been described. The third day a comparatively early start should be made so as to have ample



AN IMPROMPTU INTERVIEW WITH A FRIEND IN NEED.

time, in case of delays, to reach Cape Charles in time to go aboard the boat. If anyone is in so much of a hurry that he would like to make the trip from Philadelphia in two days, the best stopping place is Salisbury, 136 miles.



CAPE CHARLES, WHERE WE TOOK THE NORFOLK BOAT.

station), Belle Haven and Eastville to Cape Charles, which we reached about noon. We had several hours to wait for the boat, which sails at 4:25 P. M., on the arrival of the train from New York and Philadelphia. For carrying our car to Norfolk we were charged the exorbitant rate of \$17.60. I have already taken this matter up with the proper officials, with a fair prospect that a more reasonable rate may be shortly extended.

We found Cape Charles to be 240 miles by road from Philadelphia, and, in the light of our experiences and observations, I would suggest the following schedule: In order to take advantage of the best hotel



A GYPSY CAMP NEAR NORFOLK, WHERE YOUNGSTERS ABOUND.

My personal opinion is that those who wish to see the exposition with the greatest comfort should disembark at the intermediate stop at Old Point Comfort (which is but 24 miles from Cape Charles) instead of going through to Norfolk (which is



VIRGINIA'S BUILDING AT THE JAMESTOWN EXPOSITION.

36 miles, by boat, from the Cape). The exposition is situated just across Hampton Roads from the point and is nearer to it than it is to Norfolk. One of the most impressive sights in connection with the exposition, in fact, the feature, which will be the most interesting to those who have visited other great expositions, will be the assemblage of warships of all nations which will anchor in Hampton Roads. The "front door" of the exposition, like that of everything else in the vicinity, is on the water front, and most of the visitors will come there by water. There is frequent boat service from the point to all places of interest in the vicinity. The point is a government reservation, and, while there is much military activity at Fortress Monroe, there will be less bustle and confusion in this isolated spot than in Norfolk. The great Hotel Chamberlain on the point is one of the finest resort hotels in the country, but it should be said, however, that the rates charged are fully in proportion to its desirability (plus the price-boosting influence of the exposition).

The vicinity of Norfolk is a better locality for boating than



CINCINNATUS AT HIS SPRINGTIME TASK.



ST. PAUL'S CHURCH, NORFOLK, BUILT BY THE PIONEERS.

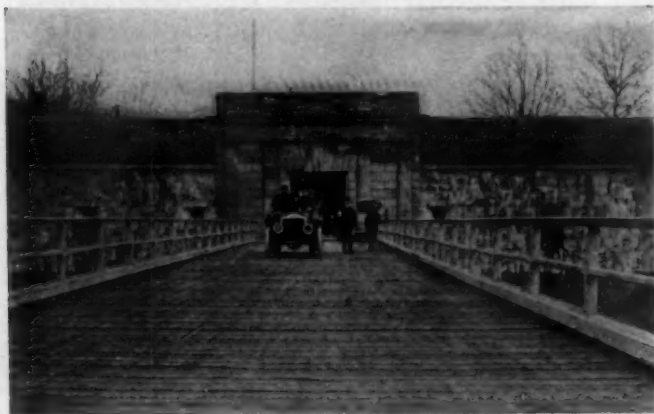
for autoing. There are bays, rivers and creeks whichever way you turn, as the soil offers no resistance to the intrusion of water. Consequently, almost all traffic is by boat and the roads receive little attention. The road between Norfolk and the exposition is a disgrace to the community, particularly in view of the fact that there is considerable hauling of material over it to the exposition grounds. We had to use our shovel to get out of one soft spot into which we sank and we also pulled out several wagons that were stuck.

In conclusion, let me say that I believe in the wise old saying "When in Rome, use Roman candles." When around Norfolk do your traveling by boat and save your motoring energies for the trip back home. In a later article I hope to discuss one or more interesting routes of returning north.

#### NO CLIMB THIS YEAR ON DEAD HORSE HILL.

WORCESTER MASS., April 15.—The Board of Governors of the Worcester Automobile Club announces that there will be no climb this year on Dead Horse hill. It is understood that a premature announcement that the club intended to conduct such an event was called to the attention of Massachusetts Legislature members and resulted in the ultimate killing of a measure under which, if it became a law, the club hoped to secure permission from the State Highway Commissioners. The club was not responsible for the announcement, but under the circumstances it has abandoned the idea of the climb rather than appear as intending to go ahead even if it did not succeed in passing its law.

The recent Stockholm-Gothenburg race was a victim of the weather, as sleet, snow and strong winds combined to create as unpleasant circumstances as possible. Of the thirteen cars starting, only three finished, and of these a Fiat made best time in 39 hours.



ENTRANCE TO FORTRESS MONROE, OLD POINT COMFORT, VA.

#### MASSACHUSETTS ASSOCIATION HEALTHY.

BOSTON, April 15.—The annual meeting of the Massachusetts State Automobile Association was held at the clubhouse of the Bay State Automobile Association. President E. C. Lee presided, and the reports of the secretary and treasurer showed the association to be making good progress.

Chairman L. R. Speare of the Legislative Committee reported that his committee had been very successful in preventing objectionable legislation, particularly in killing measures intended to lower the speed limit. In regard to the taxation of automobiles, he said that he believed that the committee would report to the Legislature a bill for an annual fee of \$3 for registration.

The Signboard Committee reported that it has secured 1,000 signs, which it proposes to erect along the highways during the coming season. The secretary was instructed to notify the clubs that are members of the association of speed traps, and the Legislative Committee was instructed to have the old and obsolete signs removed, particularly those relating to speed rules.

The election of officers resulted as follows: President, E. C. Lee, Massachusetts Automobile Club; vice-president, John P. Coughlin, Worcester Automobile Club; secretary, James Fortesque, Bay State Automobile Association; treasurer, John C. Kerrison, Bay State Automobile Association; Chairman Legislative Committee, L. R. Speare, Bay State Automobile Association; Chairman Good Roads Committee, John P. Coughlin, Worcester Automobile Club; Membership Committee, W. H. Chase, Leominster; Henry W. Knights, Boston, and A. Burbeck, Brockton.

#### BOOKS FOR AUTOMOBILISTS.

**A Work on Basic Principles.**—"Motor Car Principles" is, as its title would lead one to suppose, a setting forth of the principles which underlie the construction of modern automobiles. Roger B. Whitman, the author of the book, and technical director of the New York School of Automobile Engineers, states in his introduction that the object of the book is to explain the principles that underlie automobile construction and operation and to illustrate the movements and mechanical combinations adopted in present-day practice. This is done in some two hundred odd pages with an absence of technicalities, and although the beginner will not by a study of the book learn all there is to be learned about the automobile, he will certainly gain a good deal of useful information. The book is published by D. Appleton & Co.

**A Handbook of Practical Value.**—The latest addition to the popular type of automobile handbook, "The How and Why of the Automobile," by Fay L. Faurate, fulfills what its author has set himself to achieve, namely to present a plain, easily-understood description of the modern automobile. Assuming that his reader knows nothing about the subject, the author introduces the automobile in as simple and untechnical a manner as possible. The entire field is covered, and covered so completely that the work can be recommended as a handbook for beginners or those with only a limited knowledge of this subject. The book is published by the Motor Talk Publishing Company, Detroit, Mich.

**For Automobilists Touring Abroad.**—For the convenience of automobilists touring in foreign countries the Bureau of Tours of the Automobile Club of America has compiled and published in book form a large amount of information on ocean freights, customs, rules and regulation in some forty foreign countries. As an example of the nature of the work it is only necessary to quote the arrangement for one country. For France, for instance, ocean freight is given to the different ports, landing charges, and customs are given in detail, registration of machines, driving certificate, road regulations, speed laws, and a list of the French automobile associations likely to be of benefit to the visitor are all dealt with concisely and accurately.



# AUTOMOBILE CHANGE GEARS AND THEIR JOURNALS\*

By HENRY HESS, MEMBER SOCIETY AUTOMOBILE ENGINEERS.

**C**HANGE gears are now so generally being mounted on ball bearings that such practice, not only with us, but in Europe as well, may fairly be considered as standard.

Within the past ten years I have had considerable occasion to suggest suitable bearings, very often without being given the necessary data. Questions would take some such shape as: "What bearings shall I use for the change gear of a touring

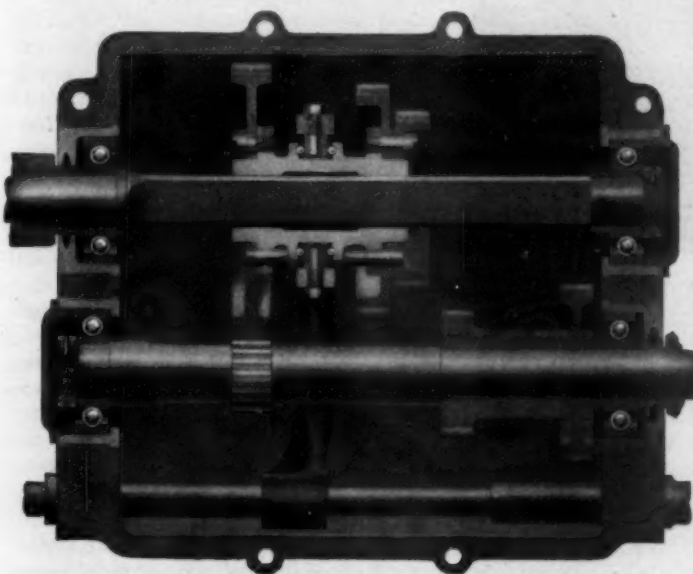


FIG. 1.—Well-mounted example of American gear.

car?" Requests for the power of the car, its weight, the intended arrangement of the gear were, not as infrequently as a gathering of engineers might think, obviously considered as a prying into affairs that did not concern the bearing makers.

At first sight it would seem a simple matter to take a given arrangement of gears, consider the power transmitted through them, their speed and position relatively to the journals and then, having calculated the load on the journals, pick out suitable bearings.

But—who knows how large a portion of the available maximum power of the engine is employed with any one gear reduction? Who knows for how large a portion of the average load hours the load is carried by a given set? Who knows what the average power exerted is, anyhow? Who knows what the maximum is for a 28-30-horsepower engine that is, however, said to really develop 40 on cylinder diameters for which other builders claim anything between 10 and 50?

## Many Important Essentials to Be Considered.

Obviously, the only practicable way out is to reduce to some sort of system the results reached by experience and observation during many years—many, that is, as measured by the history of a lusty infant industry that has cheerfully honk-honked its way to the front rank, not even restrained by false modesty from putting "Gabriel's" horn to an earlier than the intended use.

As a failure to observe a few cardinal principles in mounting ball bearings may readily give unsatisfactory results, even when a suitable size selection has been made, a brief consideration of these principles is first in order. The illustrations given, are, as a rule, typical only, with a few exceptions, which are reproduced from the actual practice of builders who have courteously granted such permission, while others are reproduced from the pages of technical journals.

\*Paper read before Society Automobile Engineers at New York.

1. See Fig. 1. One ball bearing only should be employed to a journal. The very natural resort to two or more light bearings to carry a heavier load will not answer. Slight inaccuracies of mounting, deflections of the shaft or housing, temperature effects, etc., will prevent the equalization of load between such multiple bearings, so that at times only one will be called on to do all the work. If it is not equal to that task it will go to pot, and the others will follow. Heavier bearings must be used for heavier loads, not more light bearings.

2. A bearing intended to take radial load should be so mounted that no end thrust may be imposed on it. For that reason either the outer or the inner race should be a slip fit. Were both races drive fits, the one on the shaft and the other in the housing, their seating would have to be by end pressure exerted through the balls, which would probably not be relieved, and so remain to reduce the bearing's radial load capacity, possibly very considerably.

3. The inner race should be a tight, and the outer a slip fit. This holds for all such sizes as are used in automobile work. The reason is that the continuous hammering of the load willpeen down the softer material of the shaft or housing and show this effect more on the shaft. Consider that as between opposing convex and concave surfaces of hammer and anvil the convex surface will be soonest affected. It is the shaft that is convex, and that is softer than the bearing, while the housing seat has the more resisting concave shape and the larger surface.

4. The inner race should be securely clamped between substantial shoulders on the shaft and a nut or its equivalent. This is because experience has shown that, although a drive fit is sufficient to hold the race, an intention to have a drive fit is effective only if translated into practice and only for so long as it is maintained after that. Pulling a bearing off and on a few times, or the reducing effect of the road peening will destroy the fit. But the frictional grip between a sufficient shoulder and a good nut will damp out the road vibrations so that the shaft will not be peened down.

5. When a shaft is to be secured against endwise shifting, whether in one or both directions, that office should be assigned to one bearing only, whose outer race should then be clamped between shoulders in the case. Observance of this rule will benefit the shop, since it is not only difficult, but costly to secure an accurate endwise relationship between shoulders on a shaft and a case. If such relationship is not secured then forcible

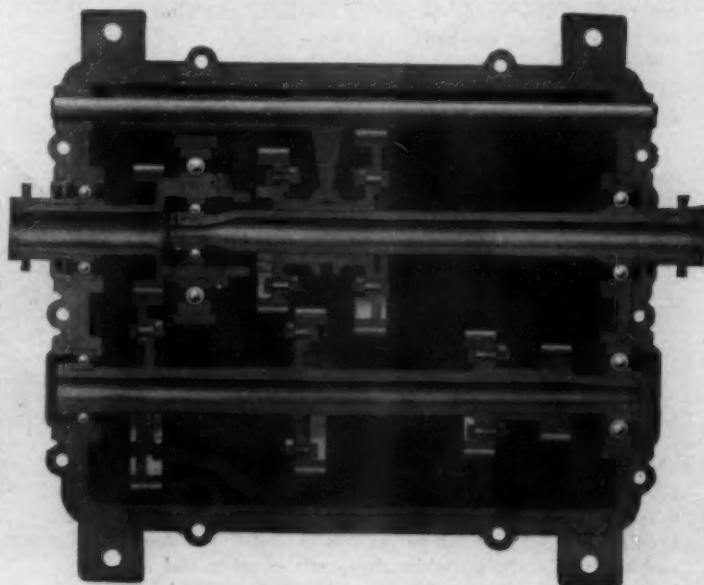


FIG. 2.—Typical illustration of good French practice.



FIG. 3.—A German type designed for 30 H.P. car.

assemblage will introduce un contemplated and destructive end thrusts. The same thing results from a deflection of shaft or housing, as well as from unequal expansion or contraction under the influence of temperature variation.

6. The bearings must be so housed in as to retain lubricant and exclude dust, grit, etc. An impression that ball bearings will operate without lubricant is more general than one might think. It is barely possible that absolutely true spheres might roll on absolutely true surfaces if both were made of materials that were absolutely inelastic and therefore would remain true under load. But since such absolute perfection of shape is not to be had, such possibility is not of interest to the practising engineer, who must, therefore, provide and retain lubricant.

#### Good Housings an Absolute Necessity.

Since not the wildest stretch of imagination will construe that grit is a lubricant, the necessity of its exclusion is, I should like to say it, apparent enough, were it not for the fact that I have run across mountings so exposing the bearings that grit from trap (or cement) rock-surfaced roads had, together with moisture, formed a cement ring between the inner and outer races, absolutely concealing the balls and binding the two races and the balls into a solid lump.

Fortunately, merely suitable shaping of parts will not only serve to retain lubricant, but also, at the same time, exclude foreign matter.

7. Rust and acid must be kept out. Experience and most carefully conducted tests have proven that long life under load can be realized from ball bearings only when the surfaces are not only true, but are also highly polished and smooth. Roughnesses will be broken down and leave still greater roughnesses. Rust and acid will destroy originally true and smooth surfaces. Since not a few lubricants contain free acids, care in their choice must be exercised. Plentiful lubrication and a properly closed mounting are safeguards against rust.

Fig. 1 is a familiar American gear, and is very well mounted: The inner races are clamped between shoulders and nuts or between shoulders, tubular distance pieces, the hubs (shown partially), or other elements outside the case, that are in turn driven home by nuts (not shown). The outer races are slip fits; those at one end are free endwise, while those at the other end are held between a shoulder in special containers and end cover caps.

The employment of bearing containers is optional. If the case is of rather soft material a container of harder material is advisable. Aluminum alloys are to be had nowadays sufficiently hard to take the bearings directly. Containers are preferred by some designers who wish to use a different lubricant in the bearing from that slushing the gears. Again, some use the containers as a convenient means for adjusting parts in their endwise relationship by simply shifting the containers in the case and with them the shafts, etc.

Fig. 2 is a fairly typical example of good French practice, of a correctly mounted 25-horsepower direct-drive three-speed gear. The end of the driven shaft is ball-journalled in the drive shaft, which is the reason for the rather large bearing carrying the inner end of the drive shaft. Bronze bushes at this point are also frequently used, but their greater wear influences unfavorably the action of the nearer gear pair.

Fig. 3, a German 30-horsepower gear, is, as to mounting, fairly like the preceding one, and employs no containers. A rather smaller bearing for the inner end of the

drive shaft is made possible by mounting this farther back, instead of directly over the small bearing inside the clutches. This does not admit quite as good bearing conditions, as the drive gear is overhung, whereas in Fig. 2 this gear is supported between bearings.

Endthrust from bevel gears and bevel pinions may be, and is frequently taken on the same bearings that take the radial loads. Fig. 4 is a case in point. As a matter of course, such bearings are relatively heavier, since one pound of endthrust is the equivalent of from three to four pounds of radial load in its effect on the bearing. The bearing directly behind the differential box, that takes the bevel gear thrust, is therefore considerably larger than that supporting the other end that carries radial load only.

Space considerations sometimes make it undesirable to use a bearing sufficiently large to take both thrust and radial load. In Fig. 5 the bearings directly behind the bevels are, as regards their outer races, free endwise, and therefore receive no thrust. Similar bearings directly behind them are, however, as to their outer races, bound endwise, so taking thrust, but free circum-

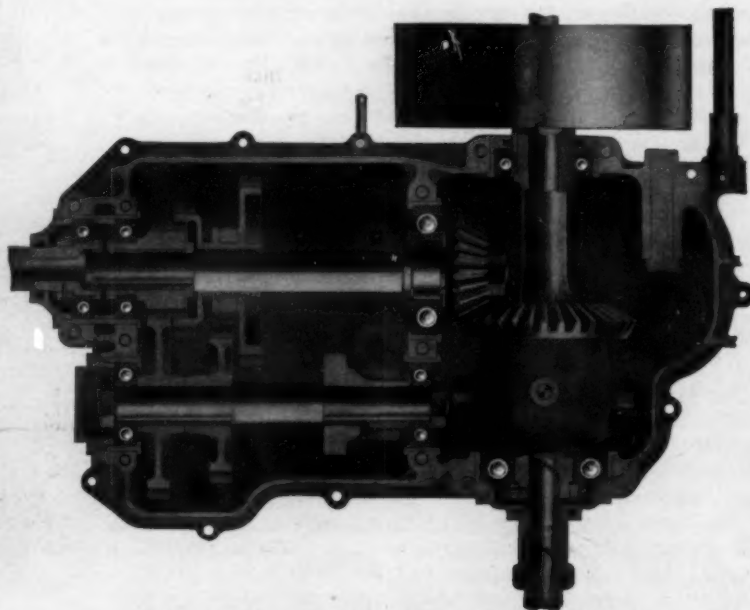


FIG. 4.—Example using same bearing for thrust and radial load.



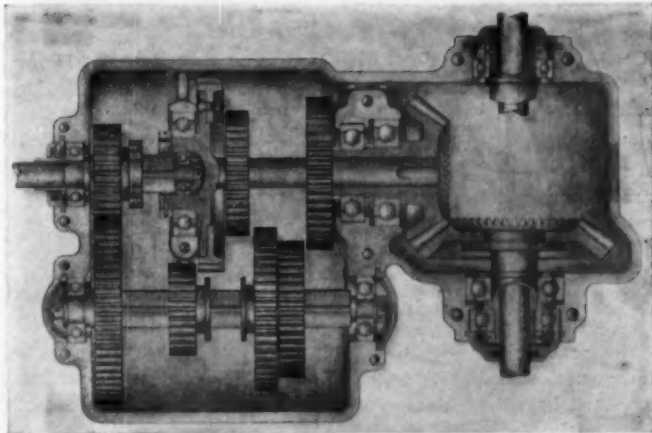


FIG. 5.—Use of separate bearings for thrust and radial loads.

ferentially, so that no radial load can be imposed on them. A good example of similarly separated radial and thrust loading from French practice is shown in Fig. 6, while Fig. 7 is taken from English practice. A tendency characteristic of much British engineering is evident in the relatively large parts used. The bearing supporting the inner end of the bevel gear spool is of quite unusual dimensions. That is a fault to which the bearing manufacturer may draw attention as involving unnecessary expense, but which he is hardly likely to seriously oppose.

Many engineers prefer to take the thrust of bevel gears on ball bearings of the collar type—a practice which is certainly good. Fig. 8 is an example. The thrust bearing is mounted directly behind the bevel pinion. Alternative mountings are shown above and below the center line. Above, the spherically faced adjusting surface for the stationary plate is machined directly into the case; below, a concaved washer is employed, as giving rather simpler shop work. Alternative mountings for the differential shaft are also indicated on opposite sides of the center line. In one a smaller thrust bearing can be employed, carrying that on the shaft, as against a larger bearing demanded by the mounting on the bevel gear hub; this last mounting, however, is rather simpler, mechanically.

The various modifications of mountings likely to occur in practice have been fairly covered by those shown, so that I shall now take up the size selection.

#### Load Data Collated from Numerous Examples.

Since, as has been previously stated, size selection is based on experience rather than on mathematical deductions from insufficient premises, this chapter will be confined to giving in simple diagrammatic form recommendations of suitable bearings for various typical gear arrangements. Obviously, it would

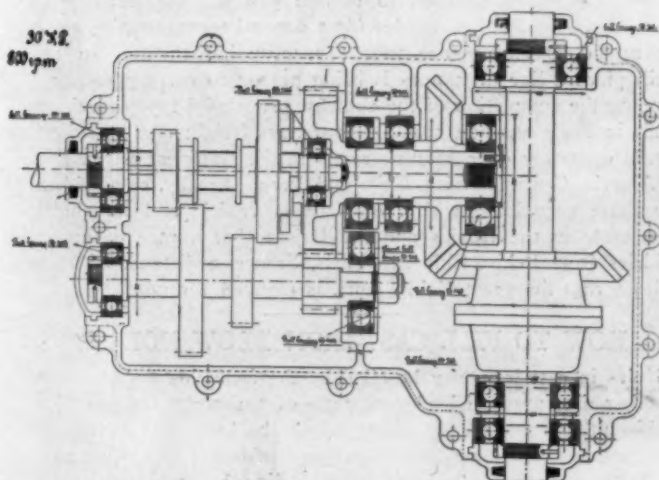


FIG. 7.—English example separate thrust and radial loading.

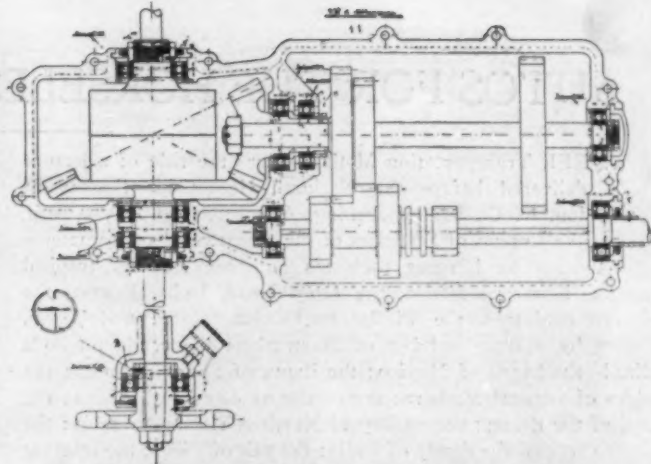


FIG. 6.—French example of separated thrust and radial loading.

not be proper, since much matter is submitted confidentially for our advice, to give actual practice. The examples are, therefore, taken from résumés of gear arrangements in the *Horseless Age* and other periodicals, and hence of general knowledge. The names given with each example are those given in the publications. In arriving at the loads imposed on the bearings, no attempt has been made to take into consideration change of engine speed with different gear sets in engagement, but bearing size suggestions are all based on an assumed engine speed of 1,000 r. p. m. to develop the horsepower cited. Journal load figures and bearing sizes may, therefore, be modified by direct proportion for other powers or speeds.

(To be continued.)

#### HOW SIZE MAKES FOR COOL RUNNING.

Given a certain load upon a journal, a certain amount of heat must be generated under certain other conditions, says *The American Machinist*. The heat generated may render the lubricant more fluid. If a bearing be short, the heat generated will be stored in a smaller mass of metal than if the bearing be long, and the temperature will be higher with the shorter bearing, and the more liquid oil will have less supporting power and the bearing may run metal-to-metal, with the further result of more heat generation. Hence a reason for advocating long bearings. It should not be forgotten, in discussing questions of the proportion of bearings, that a long bearing, having larger radiating surface, will part with more heat than a short bearing, so that increase of length acts in two ways: It keeps bearing cooler because it radiates more heat and it better prevents metallic contact because the oil better retains its supporting powers, and the supporting film is more difficult to force out. But neither must it be forgotten that long bearings have their limitations. The oil in a bearing has viscosity or adhesiveness, and length increases the opportunity for the retarding effect of stickiness.

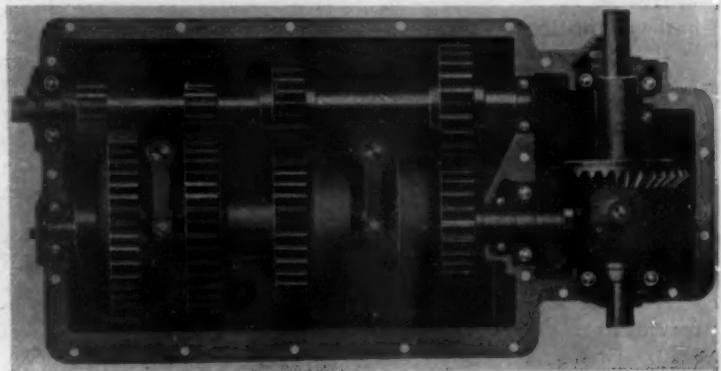


FIG. 8.—Thrust of bevels taken on bearings of collar type.

## AUTOS FOR THE HORSELESS AREAS OF THE WORLD

"QUEER Transportation Methods" was the title of a lecture delivered before the National Geographic Society at Washington, D. C., Friday evening, April 12, by O. P. Austin, Chief of the Bureau of Statistics of the Department of Commerce and Labor. The lecturer took his audience through tropical America, Northern Africa, the Holy Land, India, Burma, the Malayan peninsula, the Philippines, China, Korea and Japan, showing by a large number of illustrations the crude methods utilized—the burro of Mexico; the llama of South America; the sledges of tropical Madeira; the saddle ox of central Africa; the camel of the desert; the donkey of North Africa and Arabia; the bullock cart and the dandy of India; the yak of Tibet; the trotting ox of Ceylon; the elephant of Siam; the carabou of the Philippines; the wheelbarrow and sedan chair of Japan; the pack bull and palanquin of Korea, the jinricksha and kago of Japan, and the coolie freight carrier of the Orient.

This problem of the development of the tropics and the Orient, which had been so long delayed by reason, in part at least, of the absence of the horse for transportation between the point of production and the common carrier might now, in Mr. Austin's opinion, be solved by the substitution of the horseless freight carrier of the automobile type for the crude methods which have prevailed in those sections of the world in which the horse is not available and never can be used profitably.

### Progress Impossible Without Transport Facilities.

"Of the 100 million horses, more or less, known to exist in the world," he said, "80 million, or four-fifths of the entire number, are found in the temperate zone and nearly all among occidental people, while the remaining 20 millions are largely employed in the service of temperate zone visitors or residents, and are but feeble representatives of that noble animal as he is known to the people of Europe or America." In the United States and Canada we have 1 horse for every 3 1-2 persons approximately; in South America, 1 for every 7; in Mexico, 1 for every 12; in Japan, 1 for every 33; in Turkey, 1 to every 40; in the Philippine Islands, 1 for every 50 (in Africa, 1 for every 150; in India, 1 for every 200), while in southern China, for which no statistics are available, the number is probably even less.

No man who has visited the tropics and the Orient can fail to realize the great disadvantage under which tropical and oriental man has labored in his attempts to develop exploration, intercommunication and exchange of products; and the great benefits to science and commerce which would come from a satisfactory device which would do for the tropics and the Orient what the horse has done for the temperate zone of the occident. Clearly the conditions of transportation in the tropics and the Orient are due, in part at least, to the absence of the horse. Now comes the final question, of whether the ingenuity of man may provide a substitute for the horse, which can be utilized in those areas where the horse cannot exist. This may now be answered in the affirmative. For many years man has been experimenting in attempts to transport merchandise and men by some machine which carries within itself its own propelling power. He soon learned that he could drive a wheeled vehicle on land by power produced within itself, provided he supplied it with an iron or steel track on which its wheels might run; and with this knowledge the railroads spread over all that part of the world where horses could be found to bring the products to their stations.

### Coming of the Passenger and Freight Automobile.

But until the beginning of the twentieth century man had not solved the problem of operating self-propelled vehicles on ordinary dirt roads or across stretches of country in which no roads exist. That art has at last been attained. The introduction of the bicycle brought the rubber tire and the application of the rubber tire brought a self-propelled vehicle which could be oper-

ated on country roads, the automobile. Then came the development of the freight motor, the self-propelling vehicle which would carry heavy loads of merchandise over the ordinary highways; and to-day thousands of horseless vehicles are moving hundreds of thousands of tons of merchandise over roads of a type which can be supplied everywhere.

### Automobile Freighters Invading Every Land.

The practicability of applying the self-propelling vehicle to transportation in deserts, in the tropics and the Orient has already suggested itself, and the experiments made have already assured success. In the deserts of New Mexico and Arizona motors are successfully working at temperatures of from 120 to 140, where horses or mules can only be used at night. In Nevada motor trucks are now performing the work of thirty horses each, carrying freights over 100 miles of mountain roads. In California motor cars are carrying over dirt roads in the mountain regions as much ore at each trip as would require 100 pack horses. In Puerto Rico a line of three motor vehicles carries passengers and mails, performing the work of more than a score of vehicles and over 100 horses. Numbers of American motor vehicles have been put on the roads of Cuba and Santo Domingo with success, and more are being ordered. In Honduras American motor trucks are conveying minerals to the seaboard from the mines 100 miles inland, a single automobile truck doing the work of 100 mules. In South America the horseless vehicle is carrying passengers and freights to inland cities at an enormous saving of time and expense. In Egypt the freight and passenger motor is beginning to take the place of the camel, and roads for their use are being constructed through the desert on which the product of the emerald mines will be brought to market. In Turkey motor cars are making regular trips over country roads carrying both freight and passengers. U. S. Consul Michael reports that the Indian Government is considering the desirability of utilizing motor transport wagons for moving the products of the outlying districts. Special Agent Crist reports a rapidly increasing use of the automobile in South Africa, especially in the mining regions; that nearly a million dollars' worth of these vehicles were imported in 1906, and that the cost of constructing motor roads is only about one-eighth as much as that of railways. In the Congo the Belgian Government is constructing hundreds of miles of roads for the use of the motor in the transportation of freights in that section. In Java an American automobile is being used for the transportation of mails over the country roads of that island. In Japan experiments with the motor car have been so successful that a company has recently been organized in that country with a capital of 10 million yen for the purpose of building and operating vehicles for a general transportation service in Tokyo and thence to the surrounding towns. In the Philippines a line of motors is being put on to carry passengers pending the completion of the railway. A special type of vehicle made in Paris has now trains of horseless freight and passenger trucks operating over country roads in the continent as well as in Algeria, Central Africa, Chile and Peru. Finally, so confident are those acquainted with the horseless vehicle and its ability to operate in the tropics and the Orient that a race of motor vehicles from Pekin, China, to Paris, France, a distance of 9,000 miles across the great Gobi desert, is planned for next June.

### HOW TO FILL CAST-IRON BLOW HOLES.

Holes in cast iron may be filled by the following alloy: Melt together nine parts of lead, two parts of antimony, and one part of bismuth, and pour this mixture into the hole, first somewhat warming the hole, says the *Mechanical World*. This alloy possesses the quality of expanding when cooling, hence becomes solid in the holes when cold.



## LETTERS INTERESTING AND INSTRUCTIVE

### The Question of Steel versus Castiron Pistons.

Editor THE AUTOMOBILE:

[704.]—In an experimental automobile I am about to build, I wish to use steel cylinders, probably in connection with steel pistons, for the sake of securing a maximum of strength and lightness, but I do not feel altogether safe in disregarding the general condemnation of steel cylinders which seems to exist in the comment of all who have tried them. Nevertheless, it is my opinion that there are enough mechanisms in which steel-to-steel bearing surfaces are used with good results to indicate fault in the application rather than in the principle of using steel for this purpose. What, in detail, if you will please tell me, are the troubles actually found with steel cylinders? Do they seize, wear too rapidly, warp—or what? I fully understand that ordinary cylinder iron is believed to contain enough free graphitic carbon to act as a lubricant, but the value of this cannot be very great because cast-iron-to-castiron quickly seizes when run dry, showing that chief dependence must be placed on the lubricating oil, after all. And why is not a castiron piston all right in a steel cylinder?

Lakewood, N. J.

E. H. HOUSMAN.

The question you raise undoubtedly is in a considerable degree an open question, still subject to settlement as automobile building advances, though to-day the general practice of the industry is overwhelmingly in favor of castiron and against steel cylinders. Steel cylinders tend to seize, principally, no matter how well their lubrication is looked after, but it is a fact, bearing out what you say, that there are occasional instances found of their successful use. It probably is not so much the free graphite in castiron that gives it its value as it is the presence of minute pores which trap globules of oil (becoming oil-soaked, as it were) and thus facilitate lubrication. Castiron to steel does work better than steel to steel. Once seizing commences, it produces rapid wear and overheating, but these seem thus definitely to be effect rather than cause. In attempting to use steel, too close a fit should not be attempted, or differences in size due to variations in temperature may aggravate the troubles that are difficult to avoid at best. In the Christie car, which is the American entrant in the coming Grand Prix, and which was described in last week's issue of THE AUTOMOBILE, pistons and cylinders are of steel, but the two are absolutely prevented from coming in contact by the ingenious expedient of casting two broad bronze bearing rings directly into grooves turned in the surfaces of each piston. This engine has seen some hard service and has given no trouble whatever. A suggestive fact, because of its bearing on this problem, is the little-appreciated quality of hardened steel to hardened steel for shaft bearings, this combination being widely used by conservative engineers of standing for the heaviest and most exacting services—provided the conditions are such that complete and unfailing lubrication is absolutely assured. Otherwise its use is not even to be considered.

### Two-Cycle Engine Dimensions.

Editor THE AUTOMOBILE:

[705.]—Will you please publish the full dimensions of a good two-cycle gasoline engine?

Chicago, Ill.

SUBSCRIBER.

There is so little unanimity among even the best qualified designers as to what proportions are most satisfactory for two-cycle engines, that it is difficult to give you figures which will be in no way beyond criticism. Probably the following come about as near as is possible to an average of the best current practice: Bore, 4 1/4 inches; stroke, 4 inches; exhaust port, 3-8 inch deep and 3 inches wide; bypass port, 1-2 inch deep and 3 inches wide; intake port (assuming that you have in mind a three-port engine), 1-2 inch deep and 3 inches wide; deflector straight, and one inch high; connecting rod, 8 inches long; piston pin, 1 inch in diameter; crankpin and crankshaft, 1 1/2 inches in diameter; cylinder walls, 1-4 inch thick; water jacket space, 5-8 inch, and piston length, 6 inches. In a two-port engine a 2 1/2-inch flat poppet valve with a 1-8-inch lift will serve in place of the intake port.

### How to Connect Up an Apple Ignition Set.

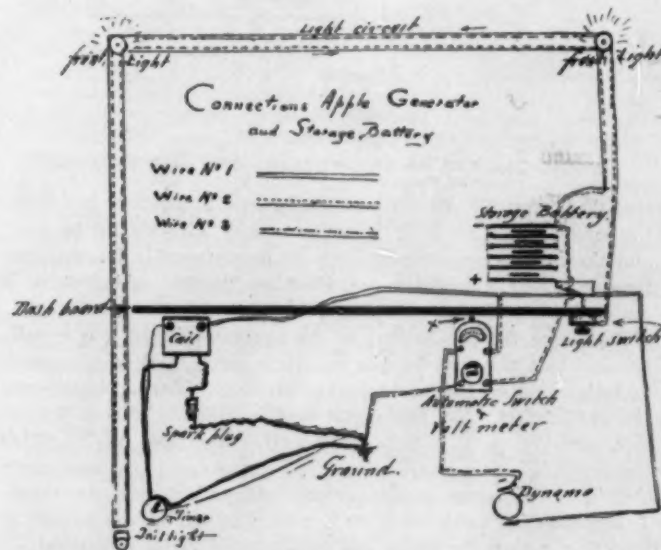
Editor THE AUTOMOBILE:

[706.]—Will you please let me know through "Letters Interesting and Instructive" if the connections of my dynamo and storage battery are correct, as per sketch enclosed? You will notice that the connections are the same as illustrated in No. 10, March 7th, of "The Automobile." Now, having established the wiring as shown, I turned the switch on and started the machine. Do not know exactly on what section the switch was, I presume it was in amp. charging, when, after a while, I saw smoke going out from the voltmeter, and before I could stop the current the voltmeter was completely burnt and out of service. I looked all over the system to see if there was a short circuit somewhere, but could not find it, and saw everything properly adjusted as per sketch.

The only apparent cause (to my understanding) of the overheating and burning of the system seems to be the different kinds and diameters of the wires: wire No. 1 being double insulated thick for secondary work; No. 2 common lamp cord half the size of No. 1, and No. 3 also cord of half the size of No. 2. Have also noticed that my "Apple dynamo" heats; after running an hour or two it scarcely can be touched with the hand.

The storage battery is a 6-volt 60 ampere-hour system. I beg to ask you the following questions:

1.—What was the cause of the burning of the voltmeter, and how can I prevent it?



SKETCH OF IGNITION AND LIGHTING CONNECTIONS.

2.—In the spot marked by an arrow is a hollow nut where an electric cord or wire may be inserted, such wire or cord was lost en route, and the instrument came to my hands without it. Is it necessary and how used?

3.—Will the different diameters of wire have a bad influence upon the current and determine the overheating of the conductors? If so, what kind or size of wire or cord must be used?

As I am a subscriber to "The Automobile," will you kindly answer these questions, and believe me yours truly,

San Luis Potosi, Mexico.

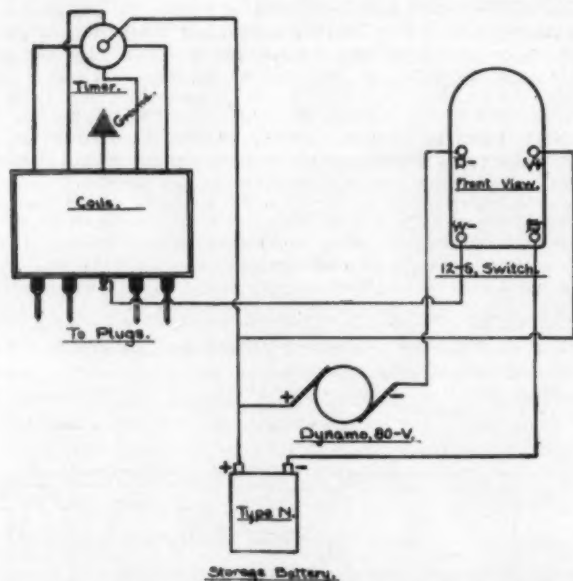
STRANGER, L. B.

1.—The cause of the voltmeter burning out, as you describe in your letter, was evidently due to an internal ground, or short circuit, against which you could naturally not guard, unless, as many autoists and people generally, for that matter, have a habit of doing, you took the instrument apart "to see the wheels go round" and did not get it together again properly. The makers of the apparatus, to whom we have referred your letter, assure us that the wiring is correct if connected up in accordance with the diagram you submit. The different sizes of wire used would have no bearing on the matter, i.e., the overheating, provided connections were all well made and wire of reasonable current-carrying capacity were used.

2.—The makers inform us that the hole in the top of the meter is not for the insertion of a cord, as you surmise. It was origi-

nally placed there for the purpose of accommodating a small push-button, by means of which the voltmeter could be bridged across the line in order to obtain a reading. It has been displaced by the snap-switch on instruments of more recent make and is no longer in evidence on the latter.

3.—As already mentioned, the different sizes of the wire used would not influence the action of the apparatus one way or the other, unless wire of such small cross section were employed



WIRING DIAGRAM OF APPLE DYNAMO AND ACCUMULATORS

that the amount of current used would tend to overheat it. Nothing smaller than 18 B. & S. gauge copper wire should be used, and the makers recommend Packard primary cable for the low-tension wiring, this being a built-up or flexible cable, which is the equivalent of about 16 gauge.

Regarding the overheating of the generator itself, it is equally possible that this may be due to purely mechanical reasons, such as lack of oil on the bearings, as that it is suffering from some electrical defect. Or, again, you may be running it at an excessive speed, thus putting a considerable overload on it, which would soon cause overheating. The makers have sent us a sketch, showing the proper connections, which we are reproducing together with your own, and they advise us further to have you return the burnt-out switch panel directly to them.

#### Horsepower and Other Things in General.

Editor THE AUTOMOBILE:

[707].—Will you kindly give me a little information through "Letters Interesting and Instructive" regarding the horsepower of an automobile I am about to purchase. What I wish to know is what is the normal horsepower at say 900 revolutions per minute. Also, maximum horsepower, full speed of motor being about 1,600 revolutions per minute. Also, please state about what speed car could make on an ordinary good road. Following specifications will give data on which answers to the above can be based: Run-about body; weight (entire car), 1,300 pounds; wheelbase, 80 inches; tires, 28 inches by 3 inches; tread, 56 inches; double-opposed four-cycle motor, water-cooled,  $4\frac{1}{4}$ -inch bore by  $4\frac{1}{2}$ -inch stroke; valves, mechanically operated; jump-spark ignition; car is single-chain driven of heavy Brampton type and is geared about 4 to 1. Springs and axles are extra heavy type. I wish to have a light tonneau made for this car, making it a light touring car. Would you deem this advisable?

Cleveland, O.

A SUBSCRIBER.

Asking us to tell you the horsepower of your motor with the data supplied by your letter, is, we fear, somewhat overrating the omniscience of the editor. There are other considerations and somewhat important ones, by the way, such as the compression, for instance, on which your letter is silent. But even if you had given us all the data necessary to figure the horsepower, we fear very much that it would not agree with the

maker's rating. Probably you can recall the state of affairs that prevailed a few years ago in this country, when the ratings of a number of motors that differed so little in detail as to be hardly distinguishable apart, were so much at variance that one scarcely knew what to believe, and the sarcasms "catalogue" horsepower, "dream" power, "motor" power, and a few others of the kind sprang into current use. This was particularly the case with the double-opposed horizontal type of motor, some of which were rated all the way from 12 to over 20 horsepower on practically the same dimensions. Assuming the compression of your motor to be about 60 pounds per square inch, we should say that it ought to develop about 10 horsepower at 900 r.p.m., and probably 12 to 15 at 1,600 r.p.m., but if it is designed to deliver its rated output at the former speed, should not recommend running it at the latter figure. As the weight of the car is well proportioned to its power, it should probably be able to run as high as 30 miles an hour under favorable conditions on the level, but with such small wheels, we have no doubt you will find 25 miles an hour about as fast as you can go with comfort on any but the smoothest of roads. We should recommend the use of at least 30- by  $3\frac{1}{2}$ -inch wheels and tires, this being the size specified by all American tire makers for a weight of 450 pounds per wheel, which your car will probably exceed with four passengers up. It would not be advisable to put a tonneau on without increasing the size of the tires as indicated, the result being endless tire trouble otherwise.

#### Omitted in Answering Letter Number 703.

In publishing letter number 703, from F. P. Covert, Hovington, Kas., which appeared in the last issue of THE AUTOMOBILE, the fact that it called for an answer was inadvertently overlooked. It contained the following question: "How much loss of power would there be in compressing air in a receiver and using it in a simple engine such as is used with steam?"

This would depend to a very large extent on the purpose for which the power was to be used, how far the engine was to be located from the air-compressor, and a number of other factors, but generally speaking, the efficiency is rather low. There are several sources of loss: first, the air-compressor itself, the efficiency of which would probably be 80 to 85 per cent.; second, loss occasioned by pumping the warm air of an engine-room in the case of a stationary plant, which, of course, would not be present if you refer to its use on an automobile; fourth, friction in the conducting pipes, this being excessive if the pipe is very long, as in the case cited by an engineer of a water-power air-compressor plant transmitting its power three miles to mining machinery through a 24-inch main; but 390 horsepower was delivered of 1,430 generated at the falls. In an extensive system of compressed-air distribution service used in Paris some years ago, it was found impossible to make a commercial success of it, unless the air were heated prior to use. It is also very difficult to entirely prevent losses from leaks. Experiments extending over a number of years have been made in this country with street cars using just such a system as you mention, i.e., air compressed in receivers and expanded in double-acting engines similar to those used with steam. That they were finally discarded as commercially impracticable after long experiment and investigation would appear to conclusively demonstrate that the losses are excessive.

Editor THE AUTOMOBILE:

[708].—I remember seeing some formulæ for aluminum solders printed in "The Automobile" two or three months ago—I think it was one of the January issues, and would like to know if I can obtain a copy of that number. I am already a subscriber, but would like to get another copy of that issue.

R. W. SHEARER.

Chicago, Ill.

We recall the fact that the formulæ you refer to were printed in THE AUTOMOBILE around the time you mention, but are under the impression that the issue was one of the special show numbers, which are out of print. We are accordingly repeating the same formulæ herewith for your benefit. One part aluminum;



one part 10 per cent. phosphor tin; 8 parts zinc and 32 parts tin, all by weight. This is said to make an easy flowing solder with which Canada balsam is used as a flux. Another formula is composed as follows: 80 parts tin, 20 parts zinc, using a flux made of 80 parts stearic acid, 10 parts chloride of zinc, and 10 parts chloride of tin. Pure tin fusing at 250° Centigrade has also been used as solder for aluminum. The use of chloride of silver as a flux has been patented and is said to give good results with ordinary soft solder. The difficulty in soldering is said to result from its extremely high heat conductivity, which withdraws the heat of the molten solder so rapidly that it "freezes" before it has time to flow sufficiently. A pure nickel soldering bit is used where it is desired not to discolor the aluminum, this resulting from the use of a copper bit. The fact that aluminum oxidizes instantly the moment a fresh surface is exposed also renders soldering difficult.

#### Wiring Connections for an Automatic Cut-out.

Editor THE AUTOMOBILE:

[709.]—How should an automobile cutout be wired?

What size wire and how many turns in the coil, say for a dynamo of 15 v. 3 amp. output?

Will a series wound dynamo deliver current through a coil bridged across it, or should the automatic cutout be wired in series with the storage battery from the dynamo?

What prevents the storage battery remagnetizing the coils of the cutout when the dynamo stops? Should the tension spring in the cutout be strong enough to hold anything less than 6 v. for a 6 v. accumulator and release and close the circuits when the current reaches above that point?

J. W. SMITH.

Chillicothe, Ill.

(1) The connections to the cut-out will depend more or less on the wiring of the remainder of the system; if the dynamo is only to be employed in charging the accumulators, the current from the latter being used for ignition at all times, then the cut-out should be wired in series with the generator so that upon coming into action it throws itself into shunt or across the line, and connects the storage cells in series with the generator.

(2) As by cut-out, we presume you mean simply an under-load circuit-breaker, the number of ampere turns required on it will be determined by the maximum amperes of the charge and the amount of magneto-motive force needed to actuate its armature, so that the amount of wire needed will depend largely upon the rest of the design.

(3) A shunt-wound dynamo should be used for charging and the cut-out wired in the circuit as already mentioned.

(4) When the current drops below a determined minimum the spring of the cut-out which always tends to break the contact against the magnetic force generated by the current, pulls the armature away and severs the connection, both between the dynamo and the accumulators and between the latter and itself. When the cut-out is not in action, there is no connection between it and the accumulators, but only to the dynamo, so that the generation of a current by the latter serves to operate it.

(5) As a three-cell battery reaches 7.5 volts or slightly in excess of this while on charge, the circuit-breaker should become operative at anything less in order to prevent the battery discharging through the source of the current in case its voltage should exceed that of the latter.

#### Information Wanted Regarding the Brush Runabout.

Editor THE AUTOMOBILE:

[710.]—Will you kindly inform me if, in your opinion, the Brush runabout is all the makers claim for it?

Also, is it good practise to place the whole plant of an automobile directly on the frames and axles? I believe the Brush car is so constructed, there being no springs to absorb the road shocks that naturally would be transmitted to the motor and machinery.

Hartford, Conn.

W. C. WILLSON.

While we aim in this department to be of as great assistance as possible to our subscribers in all matters pertaining to automobiling, it should be apparent to you on a moment's considera-

tion that you are asking a manifest impossibility in the present instance. To reverse things, it would be as appropriate for you to ask the manufacturers of the Brush runabout if THE AUTOMOBILE were all its publishers claim it to be.

Regarding the latter part of your letter, we must also inform you that it is not the province of this department to criticise current designs, particularly as represented by new cars that have not yet undergone the test of time in a number of owners' hands. All we can say is, that the car in question is the work of a well-known designer, and was presumably not uncovered before having been put to a very thorough trying-out behind the scenes, as is the case with every engineering work. It is not customary in this or any other field of engineering endeavor to rush untried and untested machines on the market. Some makers of automobiles attempted to do so in earlier days, but soon were brought to a realization of the futility of such a plan. Your impression that there are no springs whatever to absorb the road shocks and prevent them being transmitted directly to the motor is quite erroneous, as you will note at a glance in the illustration of the car published in THE AUTOMOBILE some time since. If you wish to inform yourself regarding the car as a prospective purchase, we have no doubt that the makers will give you any reasonable form of demonstration to substantiate their claims for it.

#### Another Subscriber Who Thinks Well of This Department.

Editor THE AUTOMOBILE:

[711.]—In your issue of March 28, a subscriber writes that he finds "Letters Interesting and Instructive" worth the price of a year's subscription. I agree with him. Such information comes from owners of cars and not from dealers. In one of your issues of February you answered some questions of mine. Parts of my questions and your reply have been referred to several times by other correspondents.

I wish to say that your suggestions as to cause of my trouble I found to be correct; camshaft on inlet side was considerably out of where it should mesh with crankshaft. As there were plain punch marks on camshaft gear and on crankshaft, it was quite easy to adjust (that is, after one knew). Also, I found that another man to whom I had taken car had tried to fix it by advancing timer. He had advanced it so far that spark came just as exhaust valves opened. I am now overhauling this car myself, replacing some sprockets, cones, and balls, and I think the car will run as well as ever.

In your issue of March 28, a subscriber asks as to direct current from dynamo to coil. Perhaps my experience may interest him. During the Boston show of 1906 I saw and asked a lot of questions of the representative of the Dayton Electrical Company. I bought one of their outfits, battery charger, storage battery, autometer cutout; had full directions as to putting same in my car and carefully followed them. Starting engine from dry cells, charger seemed to run all right; when I switched from dry cells to Dayton outfit, engine stopped, I seemed to get current from charger to autometer and out on dashboard of car, but there it stopped. Ran car to a garage and they tried it with same results. They then tried wiring direct from charger to coil, started engine from dry cells and switched to charger, engine raced and a stream of sparks flew from vibrator on coil. Testing voltage showed 15 volts. While this lasted but a few seconds it cost me considerable to have coil repaired. I then returned outfit to makers and they sent me a full new outfit, all parts tagged as to wiring. I have never tried this second outfit and have it just as received. I think I could use it if I could regulate the charger and cutout (not using the storage battery) so that charger would not give over six volts at coil.

As I own two cars, one a four-cylinder air-cooled gasoline, and the other a White steamer, and as I take entire care of both, I have quite a variety of parts to look after.

Dunbarton, N. H.

C. F. M. STARK.

Even the editor likes a bit of taffy now and again, so that we are pleased to learn that our suggestions happened to hit the mark in your case and proved of actual assistance. It is rather more of a rarity to be complimented on having been right than to be taken to task for being wrong, though we note that some of our worst accusers fail to respond with a bill of particulars when we plead to the indictment and ask for further details of the error. However, the value of this department does not lie so much in the assistance that the editor can give the subscriber as it does in the fact that it constitutes a practical clearing house

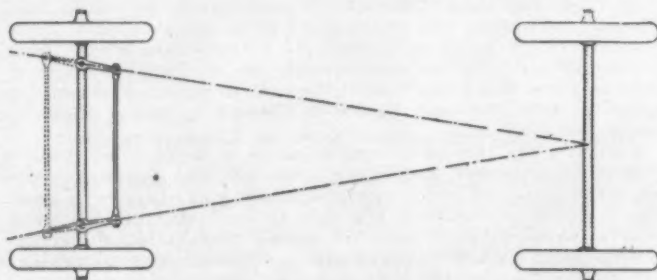
for the interchange of actual experiences in taking care of cars and in overcoming difficulties, between thousands of subscribers in different parts of the country, and we have no doubt that there are many autoists who will agree with you and the writer you refer to, that this is a privilege well worth the price of a year's subscription. We are always pleased to be of assistance, if possible, when you are in trouble, or to convey your suggestions of a remedy for some other subscriber's trouble, through the columns of THE AUTOMOBILE.

Regarding the matter of the Apple dynamo and charging set, your letter is opportune, as you will note by the answer given to Stranger L. B., San Luis Potosi, Mexico, which you will find in this issue. The maker's wiring diagram, reproduced herewith, should be of assistance in installing the system in question, but if not we will be glad to help you out further.

### Laying Out Steering-Pivot Arms.

Editor THE AUTOMOBILE:

[712.]—Being a subscriber to "The Automobile," I have taken much pleasure in reading your "Letters Interesting and Instructive." Since your inquirers receive such interesting information, I am taking the liberty of asking you for a little information. Will you kindly tell me what formula is used in calculating the angle made by lines through the center of the steering pivots and the steering-pivot-arm ends with the line connecting these two ends? I understand that this angle decreases with either an



METHOD LAYING OUT ANGLE OF STEERING KNUCKLES.

increase of wheelbase or tread, but I do not know in what proportion. In order to keep the forward wheels from binding on their bearings when turning a corner, this angle should be exact and I would be pleased if you would give me a formula taking into account the wheelbase and tread combined.

Otto, N. Y.

DAVID L. BROWN.

A rule widely followed is to have the steering-pivot arms in position for straight-ahead travel lie along lines drawn from the centers of the steering-pivots to the center of the rear axle. This, of course, applies only to rearwardly-extended pivot arms, used in connection with a drag link behind the front axle. With the drag link in front of the axle, the pivot arms may be practically in registry with the forward prolongations of the lines mentioned. There is no hard and fast rule invariably followed, however, in the laying out of steering gears—each designer usually having his individual preferences, which will be found applied in the constructions for which he is responsible. It is not possible—without most objectionably-complicated linkages—to produce a steering gear serving the same ends as the accepted type, which shall function correctly at all angles of turning. One or both wheels are bound to be at slight angles to their direction of travel in at least some positions. Consequently, there is afforded a choice between the policy of distributing the unavoidable error as nearly as may be through all angles, and that of minimizing it in the more nearly straight-ahead positions at the expense of the less-utilized wider angles of turning. Theoretically, lines drawn through the axes of all the vehicle wheels should meet at the center of the circle about which the car is driven. With this fact in mind, a few moments of work with paper and drawing instruments will quickly demonstrate an abstrusity which, it must be admitted, the problem does not appear to possess upon a casual consideration; hence, the method referred to above.

### The Early Benz Engines.

Editor THE AUTOMOBILE:

[713.]—If you will be so good as to tell us, through the correspondence pages of "The Automobile," whether the old Benz cars, made in Germany, were propelled by two-cycle or by four-cycle engines, you will settle an argument that is causing myself and two friends some agitation. My friends, one of whom declares he drove an old belt-driven Benz, insists it had a four-cycle engine. I, on the other hand, have a distinct recollection of reading that these cars were driven by two-cycle motors—making the use of the two-cycle principle by Benz antedate the work of Clerk, who is commonly regarded as the inventor of the two-cycle engine. Hartford, Conn.

AN OLD TIMER.

The first patent issued to Benz and Company bears the date of March 26, 1884, and was for a two-cycle engine, which was used in the very first Benz cars. It failed to prove satisfactory, and at a very early date was discarded in favor of a fourcycle motor of such evidently superior construction that numbers of them still are in use in Europe. You are wrong, however, in assuming that the Benz two-cycle engine was an anticipation of the work of Clerk, who certainly produced a two-cycle motor at as early a date as 1882. In construction, the first Benz engine bore little resemblance to the two-cycle motors of the present day. It was fitted with a disk, instead of the now almost universal trunk piston, and a crosshead and a double-end cylinder were used, as in steam practice. The cylinder space beneath the piston was used for the precompression now commonly performed in the crank chamber, and pure air was handled here instead of mixture. A bypass pipe, closed by a mechanically-operated poppet valve at its upper end, connected the two ends of the cylinder, and in addition to this there were two other mechanically-operated valves—an exhaust and a fuel valve—opening into the combustion end of the cylinder. The operation was peculiar. At the end of the power stroke the exhaust valve was opened and as soon as this reduced the pressure enough the air compressed beneath the piston would flow through the bypass and hasten the exit of the remaining gases by a scavenging action. To insure this result the bypass valve was opened at about the middle of the exhaust stroke by a valve mechanism. Immediately after midstroke both exhaust and bypass valves were closed and compression commenced, during which gaseous fuel of liquid-fuel vapor was positively pumped in by an auxiliary pump, until the desired mixture was produced ready to fire. Probably the one particularly interesting feature amidst the crudity of the general design was the fact that this engine handled its charges expansively, expanding the burning gases to double the initial charge volume before exhausting. This helped both cooling and efficiency, and made for a silence of operation at that time less common than it is now.

### What Is the Cause of Overheating Here?

Editor THE AUTOMOBILE:

[714.]—I would like to ask a few more questions, if it isn't too much trouble to answer them. I see by my letter (No. 658) that my account of my trouble is not very explicit.

The engine seems to go when the throttle is opened about a quarter of an inch, but does not ignite every time when starting, but does ignite when running, but leaving the throttle open in that way heats the engine too much and stops it.

Meshoppen, Pa.

H. N. F. CRAIGE.

Without any further information than you give in your letter, we should say that the symptoms point to carbureter trouble. Probably the mixture is too rich, which may account for the failure to ignite regularly when starting, provided, of course, that the ignition and other essentials are all in good order. Assuming that the engine is properly lubricated and does not stop owing to the lack of oil when it gets warm, the latter part of your letter would appear to confirm the diagnosis of too rich a mixture. We should think that running with the throttle further open would remedy the trouble, as it hardly seems possible that the engine would pull with any amount of load on when the throttle was open but a quarter of an inch, and so far as running under no load is concerned, it is by far the better plan to stop the engine altogether when not in use.





THE Pennsylvania automobile makes its bow to the public as a high-class machine sold at a moderate price, just sufficient to cover the cost of designing, materials, construction and selling, plus a fair profit, and nothing more. As a new comer it has yet to make a record, and it is only because that record is not made that it is offered at a lower price than the majority of machines of its class.

Two models are built by the Pennsylvania Auto Motor Company, of Bryn Mawr, Pa., and handled in New York by R. T. Peckham, 2234 Broadway. One is a touring car, the other a runabout shorter in wheelbase by about four inches, but similar in all mechanical features. Thus a description of the touring car will serve for the two models.

The frame is of pressed steel, eight gauge, 41-2 inch vertical spread, with 11-8 inch flange at top and bottom, narrowed at the front to give a wider steering angle. A pressed steel sub-frame is provided for the motor and transmission gear. Wheelbase is 112 inches, tread 56 inches. The frame is hung on semi-elliptic springs in the front and rear, with a transverse platform spring in the rear. Dimensions are 40 inches by 2 inches.

**Motors.**—The motor is a four-cylinder vertical Rutenber, 41-2 inches bore by 5 inches stroke, developing 35 horsepower. Cylinders are cast separately, with bearing between each; the inlet and exhaust valves are on one side, operated by a single camshaft. Ignition is jump spark by accumulators and four unit coil carried on the dash. The commutator is located on the upper end of a vertical shaft between the engine and dashboard, where it is accessible and out of the way of oil and dirt. The well-known Schebler carbureter is employed and

throttle and spark are controlled from levers on the steering wheel, but not rotating with the wheel. The engine is lubricated by means of the Kinwood mechanical pressure feed lubricator positively driven by an eccentric and belt from the vertical timer shaft. The engine is water-cooled and has a cellular radiator with water circulation assured by a gear-driven centrifugal pump. A belt-driven fan behind the radiator draws in a powerful draught of air. A new exhaust manifold, specially designed for the Pennsylvania car, permits of ready access to the valves.

**Clutch and Transmission.**—The cone clutch is of 101-2 degrees angle and is actuated by the usual foot pedal, permitting the use of a 450-pound clutch spring, and so designed as to give perfect alignment. The clutch is fitted with a ball spring thrust and a ball clutch thrust. The gear box, like the motor, is mounted on a sub-frame and provides three speeds and reverse, with selective type of change speed lever. All gears and shafts revolve on annular ball bearings, which reduce the loss of power due to friction to a minimum. A double universal joint between the motor and transmission insures perfect alignment.

Drive is by cardan shaft to rear live axle, of the Timken type, fitted throughout with Timken adjustable roller bearings. The pinion and pinion shaft are supported by two cages of adjustable roller bearings, which insure constant and perfect alignment between the pinion gear and the large bevels on the differential. A four spur standard type differential is used, the hub of which is broached to accept the squared ends of the floating type driving axles. On the outer ends of the driving axles are machined square ends, to which are attached driving jaws or clutches that engage similar jaws in the rear wheels. This, the stand-



AS THE PENNSYLVANIA LOOKS FROM THE REAR.

ard type of floating rear axle, embodies every improvement and is built of such material that it is of greater strength than the possible power developed by the motor. The gear mechanism is controlled by a single lever traveling in a H-slot guide, with the piston interlocked between the low and the reverse to prevent any possibility of going into reverse while the car is moving forward.

**Brakes.**—Two independent braking systems are provided, both operating on drums on the rear road wheels. The foot brake controls a contracting band on the drums, and the side lever operates the expanding internal brakes on the same drum. A unique system is employed to equalize both the foot brake and emergency brake on the rear wheels by means of a link pulling forward from the center of a yoke, which contracts and expands the two bands.

The machine has a road clearance of 9 1/2 inches, and under the motor and transmission gear is a fiber mud pan completely protecting all working parts. It is suspended by means of eccentric clips, and so arranged that it can be dropped in a moment by releasing the clips.

For the touring car the accommodation provides seating for five people, three in the tonneau and two in the front. The body is large and roomy, well upholstered and finished in either Brewster green or Mercedes red. A complete equipment is provided, consisting of tools, gas and oil lamps, generator, horn, etc., and the total weight is 2,700 pounds.

The runabout, known as Model 8, is a racy-looking machine having the same power plant as on the touring car just described but four inches shorter in wheelbase and with the front wheels carried directly under the radiator. The runabout body provides the two usual seats and has, in addition, a folding rumble seat in the rear. A movable trunk is also provided as a part of the regular equipment. This car weighs, complete, 2,200 pounds and is geared 2 1/2 to 1.

#### Pennsylvania Makes Fast Economical Run.

An interesting demonstration was recently made by the new Pennsylvania car in a run from the factory at Bryn Mawr to Nutley, N. J. The cyclometer registered 116 miles, and this distance was covered on 6 1/2 gallons, which gives an average of 17.7 miles to the gallon. The total distance was covered in six hours, from which must be deducted 50 minutes lost for two meals, giving an actual running time of 5:10, or an average speed of 22.4 miles an hour.

#### FOR AMERICANS TOURING IN AUSTRIA.

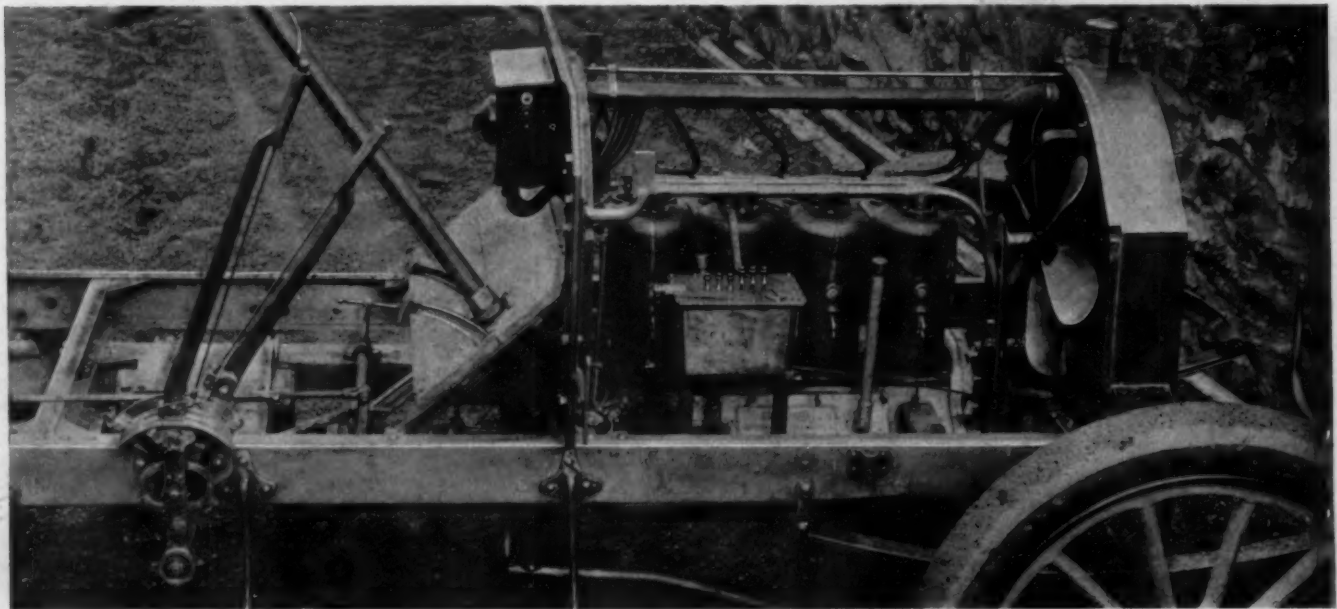
Consul J. S. Twells, of Carlsbad, furnishes the following report on the regulations governing foreign automobilists in Austria:

During 1906, April to November, a large number of American automobilists visited this consular district, in which the well-known Austrian watering places of Carlsbad, Marienbad, and Franzensbad are situated, and as scarcely any owners of machines were acquainted with the regulations in force regarding foreign automobilists, great inconvenience was experienced by many Americans. They thought themselves justified in submitting their grievances to the authorities, hoping to get relief. As the number of Americans coming to this district is likely to be even greater during 1907, travelers using automobiles should make themselves acquainted with the legal rules and regulations now in force, because those who do not understand them may find themselves subjected to disagreeable positions and meet with many troubles and annoyances which could be avoided. The following is an extract from the rules and regulations in regard to automobiles coming into Austria:

For every automobile passing the frontier, no matter whether the automobile remains in the country or not, and without any reference to the machine being old or new, or for private use or business purposes, the full custom-house duty levied must be paid in cash if the machine remains in the country, or the amount is requested to be deposited if it is to be taken out of the country. It is very important that travelers should provide themselves with sufficient Austrian money before they enter the empire.

A duty must be paid or deposited for machines weighing 800 pounds, \$15 per 100 pounds; from 800 to 3,600 pounds, \$12 per 100 pounds; from 3,600 to 6,400 pounds, \$10 per 150 pounds; and above 6,400 pounds, \$6 per 150 pounds. When producing the receipt on leaving the Austrian Empire the money deposited will be returned to the owner. A machine brought into Bohemia may be used fourteen days without restriction. After that time the use is only permitted if it has been subjected to a technical examination by a commission appointed by the chief court of administration at Prague. A tax of 120 crowns (\$24.36) is required to be paid for this examination. Machines coming from certain countries with which the Austrian Government has made a special agreement, as for instance, Bavaria, Italy or Saxony, can be used without an examination three months.

All persons driving motor cars in Bohemia longer than eight days must undergo an examination at Prague or Reichenberg to obtain a license, for which a tax of 50 crowns (\$10.15) has to be paid. Drivers from Italy may drive three months without any examination or license. The speed of a car must never exceed 9 miles an hour in towns and villages or 28 miles on the highroad; during a fog, at crossings, curves, and in all places where special care should be exercised, the speed must not exceed 3 1/2 miles. In inland towns and villages it is not permitted to drive with an open exhaust box.



POWER PLANT OF THE 35-40 H.P. PENNSYLVANIA CAR AND ITS CONTROLLING MECHANISM.





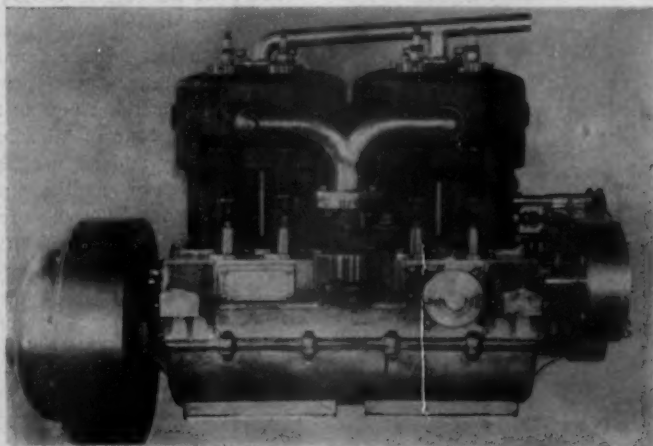
UNDER the title of the "Blomstrom Thirty" one of the most promising entrants of the medium-priced field that the market has brought forth in many a day, is making its debut this season. Though it is thus a debutante, its newness is that of name alone, for from bonnet cap to rear axle it is the product of ripe experience. C. H. Blomstrom, who is its sponsor, was the designer and originator of the Blomstrom "Queen" cars, of which more than a thousand now grace the roads in various parts of the country. They first made their appearance on the market in 1902, and then represented the culmination of many years knowledge gained in practical gas engineering. They were of the horizontal opposed type, then a standard design in this country, and in the course of evolution they were followed by a four-cylinder vertical model, of which several hundred were marketed last year. In the interim, Mr. Blomstrom has become identified with the Blomstrom Manufacturing Company, of Detroit, Mich., in no way connected with the former C. H. Blomstrom Motor Company, and has devoted himself to turning out what may well be termed his best effort in this line.

**Motor Design.**—The new car is not alone extremely attractive so far as what the Frenchman is pleased to term its *l'out ensemble*, but its power plant embodies features of design and construction that reflect the experience of its creator and show how well he has profited, not alone by his own knowledge in this direction, but by the mistakes of others in this field. To put it briefly, the motor is representative of standard practice in every detail; there has been no attempt whatever to depart from accepted and well-proven lines, nor to introduce anything whatever of a radical nature. Reliability and endurance have been the watchwords of the designer throughout, and to this end simplicity and accessibility have been sought

for, not without a goodly measure of success, as will be apparent from the view of the complete motor from the carburetor side, which is shown here. The cylinders are cast in pairs from the best grade of iron especially selected for the purpose and measure 4.3-16 by 4 1-2-inch bore and stroke, respectively, the motor developing its rated output at 1,000 r. p. m. The valves are mechanically operated and oppositely disposed; this arrangement, though it necessitates the use of two separate camshafts, is favored by the designers of many of the best known and highest-priced cars on the market, both of American and foreign build. In fact, for a car designed to be placed on the market at such a low figure, the Blomstrom Thirty contains not a few features usually to be found only on very much higher priced cars.

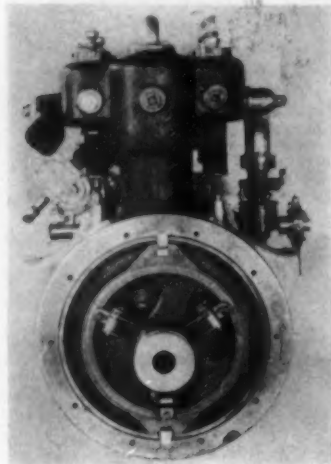
**Motor Accessories.**—For ignition, the high-tension system is employed, using accumulators as current supply with dry cells in reserve, the spark plugs being placed directly over the inlet valves. The position of the low-tension ignition timer is at once noticeable as differing considerably from current practice in this respect. It is placed horizontally near the forward end of the motor and is on a short shaft extending out a little distance from the motor, making it very accessible. It is driven by miter

gearing from the camshaft, while the circulating pump of the gear type is driven direct from the camshaft gear. The pump is also in a very accessible location, as it is placed much higher on the motor than is customary, being raised well above the level of the bottom of the cylinders. The carburetor has also been placed high, it being quite evident that the designer has borne the matter of accessibility in mind at all times. The neatness and simplicity of the inlet manifold is particularly striking, as will be noted from the illustration showing the carburetor side of motor. All gears are housed.



CARBURETOR SIDE OF MOTOR, SHOWING TIMER.

**Change Gear and Drive.**—The clutch is of a novel design, of Mr. Blomstrom's own creation, and is distinguished by its simplicity. It consists of a complete circle male member fixed rigidly to the flywheel; this carries a raised V of substantial dimensions and the corresponding groove of the clutch in the movable portion consists of three grooved faces on a fixed and a moving member. One, the front angular piece, is integral with



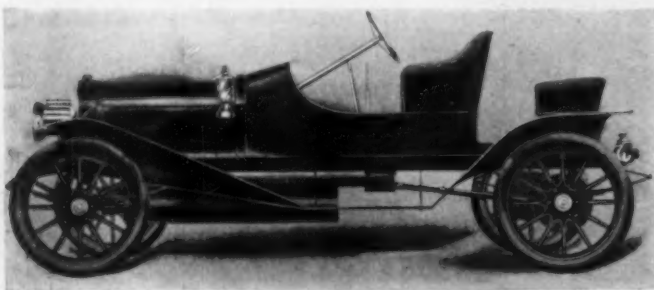
END VIEW SHOWING NEW CLUTCH.

the clutch, while the rear wall groove is detached and has two angular faces, one engaging the rear side of the male V, and one arranged to slide forward on an angular surface of the clutch body. This detached triangular rear wall groove is subdivided into four segments, each of which is pushed forward by a toggle action from the sliding clutch member, so as to cause it to wedge between the inclined rear face of the male member and the rearward facing cone seat on the clutch body itself. It would seem from the description that the device is quite complicated, but the complication lies rather in the language necessary to convey an idea of its working rather than in the apparatus itself—a fact that will be plain from the rear view of the motor, showing the clutch complete and in place on the flywheel. In use it is inclosed by a light casing fastened to the flywheel.

The change speed gear is of the sliding type, all of the pinions being of special nickel steel and hardened. Shifting is selective by means of one lever in a single wide slot, rocking laterally in order to engage either the inner or outer concentric rocker and sleeve rocker arms, giving the different speeds; the gear-shift and the clutch-rocker not being interconnected. The construction of the clutch permits it to serve the double rôle of clutch and universal joint, so that the necessity of a universal between the former and the change speed gear box has been eliminated. A universal is interposed between the rear end of the lineshaft and the forward end of the driving shaft, neither torsion nor strut rods being employed. A bevel gear drive is fitted together with a spur pinion differential.

**Running Gear and Suspension.**—Weston-Mott axles are employed, the front wheels running on two-point ball bearings and the rear on Hyatt roller bearings. The rear wheels are keyed to the tapering ends of the live axle, forced home and held in place by hexagonal nut retainers. Having so successfully demonstrated the value of the full-elliptic spring on the Queen cars, Mr. Blomstrom has retained them in this case on the rear with semi-elliptics in front. In each case they are 38 inches in length and have five leaves.

**General Details.**—The steering gear is of the worm and



HOW THE BLOMSTROM "30" RUNABOUT SHOWS UP.

sector type, irreversible, and is designed to be free from backlash. The running brake is pedal operated and consists of a toggle expanded bronze shoe engaging the inner surface of the steel brake drum on the driving wheels; the emergency, which is of the contracting type, also consists of a bronze shoe engaging the outer face of the same drum; it is interconnected with the clutch. The running brake bands are faced with camel's hair belting, while the emergency is metal to metal, i.e., steel to bronze. The wheelbase is 110 inches, the tread standard, and the tires on all four wheels are 32 by 3 1-2 inches. The body design is of the straight-line type, the outline of the bonnet being made to conform so that the car as a whole presents a most attractive and businesslike appearance. Every feature of the car shows that it is the product of a designer who has been through the mill and is fully conversant with what is required to make a car that will be not alone attractive and reliable, but enduring as well, and when a machine combines these three essentials there is nothing further to be said.

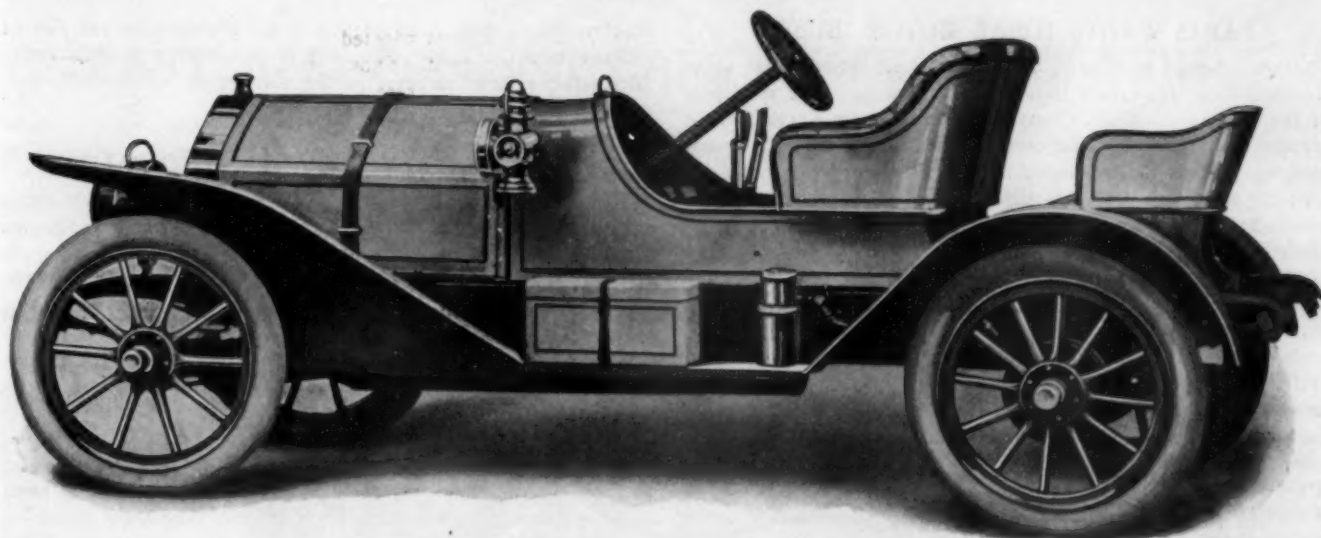
### PROGRESS OF THE MARINE GASOLINE MOTOR.

According to *Engineering*, the movement for propelling trading vessels of moderate size by internal combustion engines of one type or other—suction gas, petrol, paraffin, etc.—has not been very materially advanced during the year by anything actually done in this country, but on the Continent various partially successful, and on the whole very promising, trials have been carried out. On the Clyde the firm of Beardmore continue to experiment with engines of the Capitaine type using producer gas, and this year, no doubt, definite progress will be made. A small trading vessel, motor-propelled, and carrying some 200 tons, has been running for some time between Swansea and Avonmouth, and the Ailsa Shipbuilding Company, of Troon, has on hand for MacBrayne's, of Glasgow, a vessel of 100 feet in length, to be propelled by motor, and do trading service in the West Highlands. Of course, for pleasure and tender services motor boats are now a common product, and marvellous results are being attained by Thornycroft, Yarrow, White, and the other noted builders of such craft. Motor vedette boats are now being built for the new Dreadnoughts, which are 51 feet over all, and it is estimated that an internal combustion engine, specially constructed to work with the same fuel as in the battleship boilers, of 250 horsepower, will give the same results, as to speed and its cost, as the steam engines and boiler of 350 horsepower which would otherwise have been installed. For the successful motor engines which home firms are now turning out in great numbers, this country has, no doubt, largely to thank other countries. Both in German and Dutch waters steam has been almost entirely superseded.

### AUTOS TO HELP SOLVE SERVANT PROBLEM.

Automobile lunch wagons, not the ordinary kind of horseless carriage that has become familiar through its years of service connected to the pavement by water and gas mains on city street corners, but something new in this line, are to be called upon to help solve that bane of all suburban communities—how to keep Bridget. Biddy and all her ilk are to be communized—not on the Sinclair plan or anything similar; they are simply to be boiled down into a central power station, so to speak, from which shall emanate cooked dinners, clean laundry and the other comforts of life according to a schedule. A certain Mr. Robinson, of Montclair, N. J., where the question of having a Kate or Bridget during the cold months becomes exceedingly acute each year, is responsible for the idea. Things have been so bad there this winter that many of the inhabitants were compelled to migrate to the joys of urban hotel life. Hence Mr. Robinson's co-operative plan, which as its *pièce de résistance* includes hot dinners delivered by auto. Whether a waitress is delivered at the same time to serve them does not appear.





## SPEEDY REPRESENTATIVE OF THE KLINK LINE

OWING to the demand that was experienced for the Klink car last year, its makers, the Klink Motor Car Manufacturing Company, Dansville, N. Y., have found it necessary to greatly enlarge their facilities at the opening of the second year, and have accordingly increased their capital stock to \$400,000. For the coming season their line consists of a 45-horsepower 7-passenger touring car, a 30-horsepower 5-passenger touring car and a 30-horsepower roadster or runabout, which is pictured at the head of this page. A modern plant has been erected and equipped with every facility for turning out cars at a rate to keep pace with their scheduled delivery dates.

As there is a large call for the runabout type of car, particular attention will be paid to this end, and as will be at once apparent from the illustration, the design is along very attractive and speedy lines, while the proportion of power to weight is high. The motor is of the four-cylinder vertical type of standard design and construction; its dimensions are 4 1-4 inch bore by 4 3-4 stroke, all valves being mechanically operated. A great deal of attention has been paid to obtaining a perfect balance in the motor, so that the latter is unusually quiet-running. The entire power plant is supported on a sub-frame consisting of two substantial transverse members attached to the side members of the main frame, which is of pressed steel and of the usual channel section. An automatic float-feed carbureter takes care of the essential of fuel supply, while the ignition is of the high-tension order, employing a set of accumulators as the source of current supply, with dry cells for reserve. A honeycomb radiator of attractive outline forms the chief essential of the cooling system, the water being circulated by a gear-driven pump. A mechanically-driven force-feed oiler takes care of the lubrication.

The change-speed gear is of the sliding type, progressively operated, and provided with three speeds forward, *et marche arriere*, as the Frenchman puts it, though it seems entirely superfluous nowadays to mention that a car has a reverse gear—almost as much so as it would be to remark that it ran on four wheels. The pinions are of nickel steel. Final drive is by propeller shaft and bevel gearing. Anti-friction bearings are used in many instances, the shafts of the change-speed gear being mounted on roller bearings, as are also the rear wheels, while the front wheels run on ball bearings. As has come to be recognized standard practice, two independent sets of brakes are employed and both are centered on special brake hubs on the driving wheels. They are of the internal expanding and external contracting type, the latter being interconnected with the clutch.

Control is by means of the usual throttle and spark levers, mounted on a stationary sector above the steering wheel, an accelerator pedal also being provided for the former, thus permitting the car to be speeded or slowed down independently of the position of the hand lever, this expedient being found particularly convenient for driving in crowded street traffic. The positions on the quadrant of the change-speed gear lever are plainly marked, so that it is impossible for the driver to shift too far one way or the other in changing up or down. The steering gear is of the irreversible type and no pains have been spared to obtain the required rigidity and certainty of action in this highly important part of the car.

Suspension is by means of semi-elliptic springs of approved type and of the best spring steel, both front and rear; the latter are 50 inches long by 2 inches wide and have 8 leaves, while the former measure 42 inches in length and have but 6 leaves, the width being the same as the rear springs. The wheelbase is 108 inches and the tread standard. As shown in the illustration, the runabout type is provided with a special design of mudguards, which give perfect protection at all speeds. Equipped with two bucket seats, and a rear or "tiger" seat, as well as the usual outfit of lamps and other similar accessories that go to complete the car, the 30-horsepower Klink runabout lists at \$2,000, 32 by 3 1-2 Goodrich quick detachable tires being regularly supplied.

Using the same chassis throughout, and with a touring body having comfortable capacity for five passengers, the Model 30 touring car is constructed so that the foregoing description applies to the latter, with the exception of the body details. The weight all on in the case of the runabout is 1,950 pounds, while the touring car in complete running order tips the scales at but a scant 200 pounds additional, or about 2,100 pounds, which makes the ratio of power to weight unusually favorable in either case and permits the negotiation of anything but unusual grades on the high gear. Dansville, the home of the Klink, is situated in a picturesque valley in upper New York State, and is surrounded by hills affording grades to try the mettle of the best of cars. It is here that the output of the Klink factory undergoes its final trying out before reaching the purchaser's hands, so that its ability in the matter of both hill-climbing and getting over the rough roads for which this country is notorious is well established before it leaves the builders. Both the 30 and 45-horsepower chassis have been designed with a liberal allowance of power for their weight, as well as with ample road clearance and springs meant for traveling over the usual American roads.

### PARIS WANTS IDEAL MOTOR 'BUSES.

PARIS, April 6.—The Paris Municipal Council is again troubled over its surface transportation system. The monopoly of the General Omnibus Company expires in June, 1910. It is practically certain that the company will not be given a new lease of life and its antiquated horse 'buses will have to be discarded. It is estimated that three years will be required for a new company to construct the necessary motor 'buses, build garages and make other arrangements, hence the necessity for an early decision. A proposal to hold a competition to discover the ideal motor 'bus has been discarded on the ground that there is not sufficient time and that plenty of tests have already been made to show what automobile 'buses are capable of. For over twelve months the present company experimented with motor 'buses, getting the best firms in France and Germany to supply chassis and submitting them to prolonged tests, which proved beyond a doubt that they were capable of all that was demanded of them. Finally, instead of placing orders for several hundreds of vehicles, as the constructors thought they would, half a dozen were ordered from Eugène Brillié; the number has recently been increased to nearly forty. The Darracq-Serpollet combination is anxious to get control of the Paris omnibus service and will undertake to provide a complete system of steam 'buses over the entire city if they are granted a long lease. A decision will be made by the Paris municipality within a few months.

### AUTOS FOR EGYPT'S SANDY PLAINS.

LONDON, April 4.—British automobile manufacturers have paid a considerable amount of attention to automobiles for use in Egypt. Last year the Arrol-Johnston company produced a high-built car which has proved a success in actual service in the desert. A radical departure from previous designs is shown in a combination of tri-car and trailer recently constructed by Singer & Co., of Coventry, for the Department of Mines of the Egyptian Government. The tri-car affords a power vehicle of very light weight which should have little difficulty in traveling over sandy country. The light trailer behind is intended for the transport of baggage and mining implements. Concerning the construction of the vehicle, the tri-car has a 12-horsepower two-cylinder engine of the V type, developing up to 18 horsepower when accelerated to 1,800 revolutions per minute. An internal expanding metal clutch transmits the power to a three-speed and reverse gear, whence the drive is taken by a single chain to the rear wheel. The frame is pressed steel and the wheels are 12 inches in diameter, fitted with 5-inch Continental tires. The

largest size of tires is adopted in order to minimize the risk of sinking into the sand. Should this class of automobile prove successful, a large increase in the number of mechanically-propelled vehicles in Egypt may be expected.

### DATES FIXED FOR PARIS AUTO SALON.

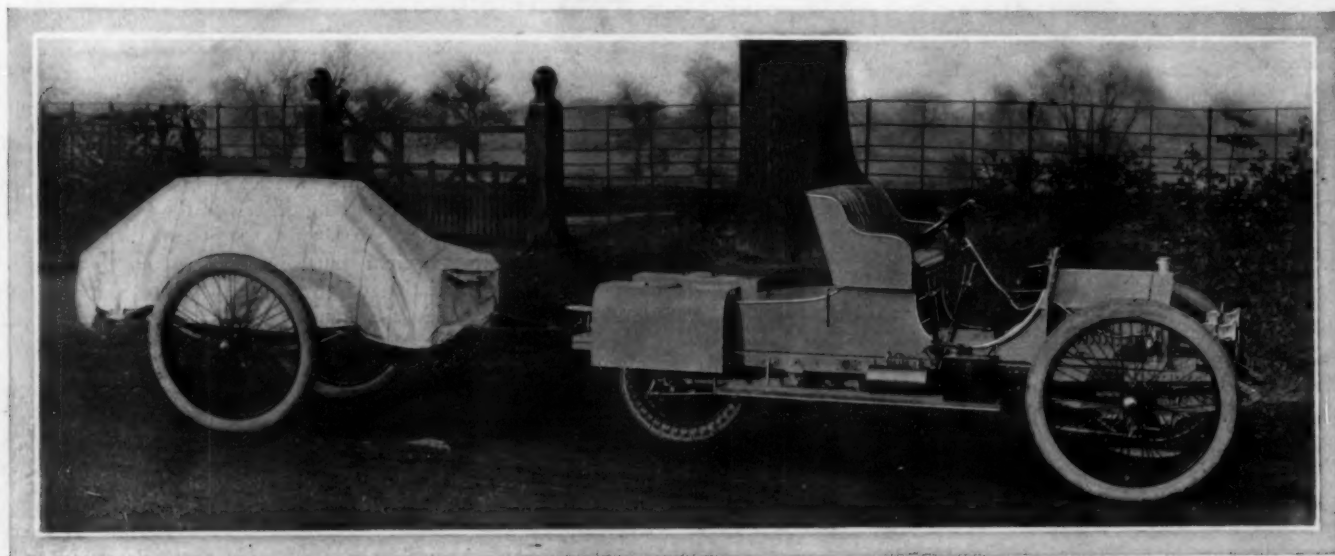
PARIS, April 8.—The Municipal Council of Paris has granted the use of a part of the Place des Invalides, the municipal Serres on the banks of the Seine, and the Avenue Dutuit, to the organizers of the tenth annual automobile salon from October 1 to December 31, at a rental of \$1,000. Two years ago the show committee used the big greenhouses on the river bank as an annex; last year the Esplanade des Invalides, one of the largest and most central open spaces in the city, was taken, and a handsome temporary building erected thereon. This year, owing to the show being a decennial event, both spaces have been secured, in addition to the Grand Palais. The renting of the ground at such an early date would appear to indicate an intention to erect more elaborate structures than ever before. The show opens on November 12 and closes on December 1. It is declared that the decennial automobile show will eclipse some of the world's fairs in brilliance and will not be much inferior in magnitude.

### RUSSIA'S FIRST AUTOMOBILE SHOW.

All the available space in the first Russian automobile show, to be organized at St. Petersburg by the Automobile Club of Russia from June 1 to 17, has now been let. Over one hundred and fifty different firms, representing France, Italy, Germany, Austria, Belgium, England and America, have secured stands. The United States will be represented by Oldsmobile, Cadillac and Ford. Pleasure cars, industrial vehicles and motor boats will form the chief attraction of the exhibition. A number of special prizes will be given by the Russian government for alcohol engines and for motor-driven agricultural machines.

### AUTOS IN FRENCH COLONIAL EXHIBITION.

PARIS, April 4.—One of the most important sections of the French Colonial Exhibition, to be organized in the Bois de Vincennes, Paris, by the Minister of the Colonies, this year, will be the automobile and bicycle hall. The organizing committee is presided over by M. Darracq, the famous constructor, and every important French firm will be represented. One of the features of the exhibition will be a retrospective exhibit showing modes of locomotion from the earliest times to the present day.



LATEST PRODUCTION OF A REPRESENTATIVE ENGLISH FACTORY FOR USE IN THE ANCIENT LAND OF THE PHAROHS



## PAST AND PRESENT CARS OF TWO PIONEERS

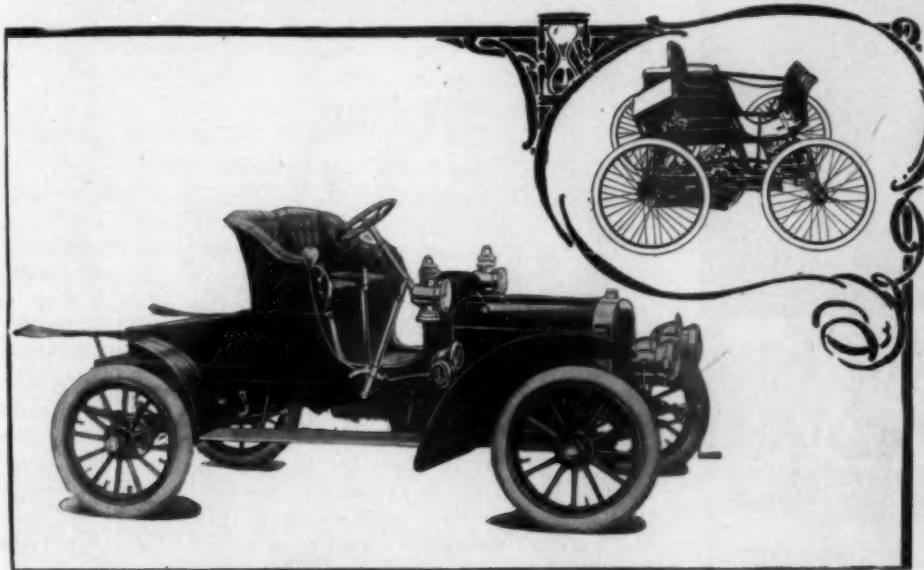
It is because the automobile has had such a sudden recognition and has sprung from a crude, elementary, unsatisfactory vehicle to its present perfected condition in a few brief years that early models are viewed with so much interest. The Smith-

factory. Since 1893 Elwood Haynes has been building automobiles in a conservative way, and many of these early types are still in good condition and capable of being driven by anyone acquainted with their peculiarities. There is no doubt that there

were self-propelled vehicles in use earlier than the date when Haynes put his curious machine on the road, for electrics and steamers were the forerunners of gasoline motors.

Mr. Haynes stuck to the gasoline principle, convinced that there was a mighty future for it, and year by year added improvement upon improvement until the present type was evolved. Elwood Haynes is declared to be the first to make use of make-and-break ignition, to adopt the side-entrance body and to make use of aluminum alloy. At the present time all the firm's cars include an improved patented feature called the roller-pinion and beveled sprocket direct drive. This is an ingenious device which solves the old rear axle problem and enables even the high-powered models to use direct shaft drive without side chains.

Within another period of fourteen years the automobile will have made still more progress, and it will be interesting then to compare the early type which Haynes created and which the Smithsonian Institute will preserve with the up-to-date models of the most modern of road vehicles.



THE PRESENT HAYNES RUNABOUT AND ITS PARENT.

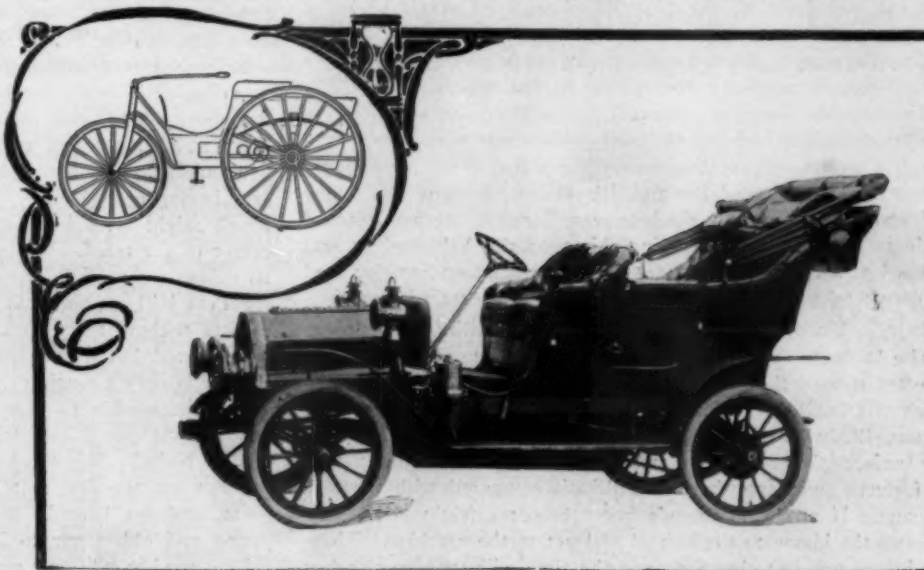
sonian Institute at Washington has made a valuable acquisition in one of the earliest American horseless vehicles built by Elwood Haynes. We give an illustration of this pioneer automobile side by side with one of the latest models turned out from the same

## OLDS' FIRST PRODUCTION AND THE PRESENT REO

TWENTY years ago R. E. Olds was what the world then designated a crazy inventor. Many of the older inhabitants of Lansing, Mich., remember his curious horseless carriage and recall how it was greeted with cat calls and derisive hoots from the small boys whenever it made an appearance on the streets of the town. Olds invented his first horseless carriage in 1886-87; it is needless to say that it was a very elementary production, but he was convinced that the gas engine could be used in propelling vehicles and continued working on these lines. In 1892 he brought out a machine which was sold to a patent medicine company in India and was used with success for a number of years. Then followed the organization of the Olds Motor Vehicle Company, later the Olds Motor Works, and finally the Reo Motor Car Company, of which R. E. Olds is president. As a contrast we show one of the earliest vehicles designed and used by Mr. Olds side by side with the latest model light touring car manufactured by the Reo Motor Car Company at its Lansing plant.

A few months ago French automobile manufacturers united and gave a public demonstration of the earliest types of automobiles

still capable of taking the road. From junk shops and dark corners of garages, where they had lain idle for many a year, noisy, weird-looking things on wheels were brought forward and furbished up



ORIGINAL OLDS HORSELESS VEHICLE AND LATEST REO TOURING CAR.

to take the road. Doubtless some similar demonstration on the part of pioneer American firms possessing such models would be interesting to the automobile and general public of this country.



## A KENTUCKIAN'S RUN INTO ADJOINING STATES By C. M. Shepherd

THE automobile "contagion" had become permanently settled on the south side of the Ohio river, and I was one of the first to contract the fever. Not being content with short jaunts, a desire followed for a long tour, and in the early part of July arrangements were made for a run through Illinois and Indiana. With a party of four, we set out from Owensboro, reached Evansville, Ind., and had a pleasant run to Princeton. From this point we proceeded in the direction of Vincennes, and on leaving Princeton we crossed the "trouble line" in reality, for we received the usual batch of Indiana-ians misdirections and were successfully piloted into a twenty-five mile stretch of newly-made mud road which had just received a baptism of rain, had no bottom, and appeared to have no end either. Had there been a railroad station available we would gladly have shipped our car and given up the trip, for I expected every stroke of the engine to be its last. On we plodded until at last a commutator spring broke in two, and we were persuaded that we should have to apply for horsepower of another variety.

The trouble was soon located, but might not have been as rapidly remedied had not the lady of our party suggested and supplied corset steel. It answered its purpose well, remaining in use until we reached Rutland, Ill. After having plowed many miles of Indiana mud on the low gear, Terre Haute was reached early in the afternoon. During this tour the White river was crossed at a charge of \$3.50; a two-horse team and wagon load of corn was transported for the sum of fifty cents.

### Through the Central Counties of Illinois.

The Wabash river was crossed at Terre Haute and our course directed toward the northwest, where we were soon to enter the State of Illinois. Road conditions were fair, except near Bloomington, Ill., where heavy rains and constant traffic had spoiled the surface. There was a notable difference, too, in the attitude of farmers and horse drivers in Illinois compared with those in Indiana. If an Illinois man's horse becomes frightened he attributes the blame to the animal and not to the machine. These conditions are fast changing, and the time will soon come when the horse will have a familiar neigh for the auto.

Fifteen days were spent with Rutland as headquarters, a number of short jaunts being made to neighboring towns. A pleasant visit was made to the historic Deer Park and Starved Rock, a distance of twenty-five miles north of Rutland on the

Illinois river, where we picknicked, used the camera and enjoyed the natural beauties of the place. There is excellent hotel accommodation here, and thousands of people visit the spot every year. The return journey was planned through Bloomington, Champaign, Danville, Crawfordsville, Indianapolis, Columbus, North Vernon, Scottsburg, Salem, West Baden, French Lick, Jasper, Huntington, and south to Rockport. We left Rutland at five in the morning, and tied up at New Ross, 185 miles distant, at 6.30 in the evening. The country thus far was level and the roads in excellent condition. We bowled along, the engine let out to its full capacity, and finished a magnificent run with nothing heavier on our consciences than the death of a few fowls, which, fowl-like, would stand in the road until we were within a few feet of them, then make a wild dash for the side.

### Back Again to the Hoosier State.

We were speeding south over excellent roads, the following morning, in the direction of the auto city of Indianapolis, which we reached in the early forenoon and quitted in the early evening to continue to Edenburg, where we had an appointment for the night. North Vernon, our next scheduled point, was reached at nine o'clock in the morning by the Michigan-Indiana State road, which runs from Michigan City to Madison, Ind. Near North Vernon the road was blocked by a long procession of spring-wagons, surreys, buggies, and jolt-wagons, en route for the Jennings county fair. We were anxious to go ahead of the procession, but they, on the other hand, had different views, and kept us in the rear of the snail march for three or four miles, at times driving three or four abreast to keep us behind. Finally we got through and gave them a taste of our dust as we speeded away.

Early on the fourth day we moved southward by the way known as Nigger Hills, parts of which are unknown to the autoist, and which may be described as of the "bumping the bumps" order. This condition continued for about seven miles south, then fair roads reappeared and continued into Scottsburg. Turning due west from Scottsburg we were soon on the "trouble line" again. Roads of stone, gutters of dust, and apparently river beds of rock, with hills such as we have never looked upon east of the Rocky Mountains, were now our lot. At the foot of each hill was a bad culvert, which made coasting an impossibility. At the close of the day we anchored at Salem, Ind., a picturesque village on the summit of the noted Salem hill, where excellent hotel accommodation was secured.

### In the Unfrequented Nigger Hills.

Refreshed and joyous, we speeded westward the following morning, little dreaming that the worst was yet to come, and that the roads we had traveled over were macadam compared to those which lay before us. Not only were they unknown to the automobilist, but they did not bear the slightest evidence of ever having been used by the ordinary vehicle. Large boulders, which might have been straddled by a high buggy, filled the center of the track. While we were zigzagging round these obstructions we were informed by natives that we were approaching Pots Hill, a point that an automobile had never been known to pass without the assistance of a team. The natives had not exaggerated, but we got through under our own power, although the car is only a single cylinder machine, a Cadillac model M.

It is impossible to give an adequate description of the road conditions about this district. All that can be said is "beware of the Nobs." We touched numerous small villages in which our car was the first that had ever been seen. Excitement was great, and we heartily enjoyed watching the actions of both young and old, eager to lay their hands on the machine.

The road conditions mentioned continued well into Jasper, where we turned abruptly south, leaving the Indian Rockies far in the rear, and experienced smooth sailing into Rockport, Ind., where we took the ferry across the Ohio and reached Kentucky soil with a full knowledge of a little travelled route and a resolution to give it a wide berth on our next trip to the North.



## FIVE STATE BODIES ADDED THE GROWING A. A. A.

THE A. A. A. continues to increase and prosper under the energetic efforts of the Hotchkiss-Elliott administration, and in the past ten days five State associations have been added to the national roster: Pennsylvania, Maryland, Kentucky, Indiana and Missouri. Michigan and Wisconsin are additions of the early future.

The A. A. A. list now contains twelve State bodies: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Ohio, Indiana, Illinois, Minnesota, Kentucky and Missouri. The Rhode Island Automobile Club in Providence is to become shortly the nucleus of a State organization; Vermont is a "soon" probability, and Michigan and Wisconsin are sure. At the next meeting called by President W. H. Hotchkiss the Executive Committee may have a dozen applications to act upon, and the total number of State bodies may reach a score or more. Apparently the retention of the greater part of the dues and the conduct of affairs in their own borders is responsible to some degree for the rapidly increasing number of State associations.

### Maryland Now Has Its State Body.

BALTIMORE, April 15.—Desiring to obtain better conditions in automobiling, the Automobile Club of Maryland and representatives from the various other clubs throughout the State met last week and formed the Maryland State Automobile Association of the American Automobile Association.

The meeting was presided over by H. M. Rowe. Secretary Frederick H. Elliott of the A. A. A. was present and spoke at length upon the benefits to be gained through State associations and membership in the national organization.

After the new association had been formed by a unanimous vote, Osborne I. Yellott spoke on the practicability and feasibility of establishing a legal bureau for the State association. Subsequently it was decided to appoint a legal bureau, to be supported by a small assessment upon the members, whereby counsels will be stationed in almost every town to render service to autoists who are unfairly arrested for alleged non-observance of the speed laws. Each member will carry a card of identification, which will be the medium to secure immediate representation of belated motorists wherever they may be detained, since the State association will guarantee a fee to any lawyer who defends one of its members.

### Pennsylvania Motor Federation in the A. A. A.

PITTSBURG, PA., April 15.—At its recent annual meeting, held at the clubhouse of the Pittsburgh Automobile Club, the Pennsylvania Motor Federation unanimously decided to affiliate with the A. A. A. President W. H. Hotchkiss was present by special invitation and the forcible and convincing address which he made was a factor in the decision to become a part of the national organization. The Federation contains fifteen of the twenty-one clubs in Pennsylvania, and those outside of the breastworks are likely members of the near future.

These were the clubs and delegates represented in the annual meeting: Isaac Starr, president Automobile Club of Philadelphia; Robert Hooper, president Automobile Club of Germantown; F. R. Slifer, Milton Automobile Club; Paul C. Wolff, Dr. J. C. Hawkins, Pittsburgh Automobile Club; John C. Gragdon, representing Pittsburgh Consulate, A. M. L.; Dr. W. G. Cook, Wilkesburg Automobile Club; Jacob Rider, Lancaster Automobile Club, and A. H. Martin, the Automobile Club of Delaware county.

In the election of officers the result was as follows: President, Isaac Starr, Automobile Club of Philadelphia; first vice-president, Robert P. Hooper, Automobile Club of Germantown; second

vice-president, F. R. Slifer, Milton Automobile Club; secretary, Paul C. Wolff. The latter was active in the formation of the Federation.

The committee chairmen announced were: Good Roads Committee, Peter A. Meixell, Wilkes-Barre Automobile Club; Legislative Committee, S. Boyer Davis, Automobile Club of Philadelphia; Touring Committee, State Senator Godcharles, Milton Automobile Club; Publicity Committee A. H. Martin, Delaware County Automobile Club. These committees will be organized by the selection of a member from each club of the Federation. Messrs. Starr and Hooper have been particularly energetic in bringing about the affiliation of the Federation with the A. A. A. Mr. Hooper is chairman of the A. A. A. Good Roads Board, and intends that his board shall work industriously for Government aid in roads building.

### Kentucky's Leading Club Joins the A. A. A.

LOUISVILLE, KY., April 15.—At the annual meeting and banquet of the Louisville Automobile Club, held at the Louisville Hotel, George H. Wilson for the fourth time was elected to the presidency of the club, which unanimously decided to join the A. A. A. and at once organize a Kentucky State Association of the national organization. Secretary F. H. Elliott and Executive Committee member A. G. Batchelder of the A. A. A. were present and made addresses.

In addition to re-electing Mr. Wilson, the club selected for first vice-president Dr. W. C. Pfingst; second vice-president, Pike Campbell; secretary, Charles Chrest; treasurer, J. B. Lewman. The club is arranging for a tour of the bluegrass section of the State, held for the purpose of interesting Kentucky automobilists in the State body.

### Hoosiers in the A. A. A. Procession.

INDIANAPOLIS, IND., April 15.—The Indiana State Automobile Association was born last Friday night at an enthusiastic meeting called by the Indiana Automobile Club and held at the Columbia Club in this city. The delegates present were: Indiana Automobile Club, President P. E. Hibben, H. O. Smith, R. A. Brown, R. J. Eads, George A. Weidley, F. N. Ayers, George W. Pangborn, H. H. Rice, L. H. Levey; Kokomo, Edgar Apperson; Richmond, J. A. Speckenheier; South Bend, Horace Kizer, M. L. Williams, Mr. Briggs.

The election of officers resulted as follows: President, H. O. Smith; first vice-president, John Cox, Terre Haute; second vice-president, Horace Kizer, South Bend; treasurer, J. A. Speckenheier, Richmond; secretary, Edgar Apperson, Kokomo.

It had been expected that coincident with the meeting would be a session of the leading engineers of various automobile concerns for the purpose of drawing up rules for the stock car race over the Long Island Motor Parkway in October next. A. G. Batchelder, member of the A. A. A. Racing Board, and also of its Executive Committee, informally discussed rules for such an event with Messrs. Smith and Apperson and others. It is expected that the postponed conference will take place in the near future. Secretary F. H. Elliott was present in his official capacity and convincingly explained the worth of a national organization and the general good it accomplishes for automobiling.

### Missourians Were Shown by Secretary Elliott.

ST. LOUIS, MO., April 15.—The Missouri State Association of the A. A. A. has been organized by the election of Harry M. Rubey of the Macon Automobile Club as president and Roy F. Britton of the St. Louis Automobile Club as secretary-treasurer. Secretary F. H. Elliott of the A. A. A. was present at the session, which was held at Macon, about midway between St. Louis and Kansas City. Mr. Rubey is the Mayor of Macon.

## AUTO CLUB DOINGS FAR AND NEAR

### Joint Orphans' Day Run Projected in Chicago.

CHICAGO, April 15.—At the last meeting of the directors of the Chicago Motor Club it was decided to observe the National Orphans' Day, June 12, which was recently instituted by the A. A. A. The club appointed a committee consisting of N. H. Van Sicklen, chairman; Fred E. Dayton, L. J. Ollier, J. V. Lawrence and Harry P. Branstreter to confer with the Chicago Automobile Club and Chicago Automobile Trade Association with the view of making the celebration of the day a general one among automobilists of the city.

The new \$165,000 clubhouse of the Chicago Automobile Club is rapidly approaching completion, and it is confidently predicted that it will be practically ready for occupancy by May 30. President Cobe, in speaking of the progress made, states that he is more than confident that the club will take possession by Memorial Day. "The contractors are now making very rapid progress," he says, "and unless some unforeseen incident bobs up our patient members who have been homeless so long will find a roof to cover them at 15 Plymouth court in a little more than six weeks. As soon as we get in there we will start doing something. The Glidden tour is of great interest to us and the Chicago Automobile Club is going to hold up its end in the entertaining line when the tourists reach this city for their Sunday stop. We are going to have a special committee to look after the entertaining, but I will not appoint it for a while, because it is some three months off, that tour.

"We are taking in about a dozen new members every meeting. Ten were admitted yesterday and now our list is almost full. You know we have a waiting list at 600, and, while I don't know positively, I believe there are only about a dozen vacancies left."

### Vermonters Organize Automobile Club at Rutland.

RUTLAND, Vt., April 8.—An organization to be known as the Rutland Automobile Club was formed in this city April 6. The following officers were elected: President, William H. Riddle; vice-president, Percival W. Clement; secretary, Charles A. Matthews; treasurer, Wallace W. Nichols. Committees on nominations and by-laws were also elected and a board of governors, of which Gov. Fletcher D. Proctor is chairman. William R. Riddle, of this city, a member of the Touring Committee of the American Automobile Association, was chiefly instrumental in organizing the club, which is the first local association to be formed in Vermont. It is expected that the membership will be about fifty. The object of the club will be to promote interest in the sport, foster the good roads movement, and compel careful driving on the part of its members.

### New Club of Sixty Members at Akron, O.

AKRON, O., April 12.—The directors of the Akron Automobile Club have organized by electing the following officers: President, C. C. Goodrich, of the B. F. Goodrich Company; vice-president, Andrew Auble, of the Akron Automobile Garage Company; treasurer, A. B. Rinehart, of the Union Garage. The club will have headquarters and clubrooms, and it expects to make a persistent fight for good roads and favorable ordinances for the use of the city streets. About sixty members have been enrolled.

### Kentucky Autoists Organize a Club at Paducah.

PADUCAH, KY., April 15.—Seventeen leading automobilists of this city have organized the Paducah Automobile Club and elected the following board of officers: President, P. D. Fitzpatrick; vice-president, F. E. Lack; secretary, Roy Grassham; treasurer, Richard Ruddy. In addition to the above-named officers Benj. Weille and Samuel Foreman constitute the board of directors.

### Monk's Hill Selected for the Quaker City Climb.

PHILADELPHIA, April 15.—Monk's Hill, a tricky, sticky-in-wet-weather, mile-long grade leading up out of the Schuylkill valley at Gladwyne station, on the Philadelphia & Reading railroad, has been finally decided upon by the contest committee of the Quaker City Motor Club for its Decoration Day hill club. Besides a none-too-good surface and an average 20 per cent. grade, Monk's Hill possesses all the requirements of the modern hill-climbing course, including thank-you-ma'ams and the inevitable "elbow"—though this time his Satanic majesty and the hairpin have been sidetracked in seeking a name for the sharp loop and the name "Quaker" substituted. The "Quaker's elbow" will furnish an ample test of a driver's ability in negotiating a fast-running car up its slope, while those who contemplate "rushing it on the high" will in all probability be considerably wiser before they reach the top.

Located less than ten miles from the clubhouse, the course may be reached by the most direct route in 20 minutes, while with the Reading station within a few hundred yards of the start spectators can be landed there within 15 minutes from the Reading terminal. Besides, in selecting this hill the contest committee has neatly solved the traffic problem, for the road is seldom used and a permit will hardly be required.

### Site for Grand Rapids Club House Selected.

GRAND RAPIDS, MICH., April 15.—The Grand Rapids Automobile Club has settled the matter of a new clubhouse, and at a special meeting of the club a committee was selected to secure a site at Cascade Springs. At the meeting a committee was also appointed to investigate the matter of paying toll on toll roads. The club will fully determine the rights of automobilists in that direction. It has been suggested that the automobile owners of Kalamazoo form a club and that the two clubs then combine with a clubhouse midway between the two cities, but this plan is not finding much favor.

### Annual Tour of the Albany A. C. Set for June 20.

ALBANY, N. Y., April 15.—Atlantic City, by way of New York and Asbury Park, is destination and route chosen for the annual tour of the Albany Automobile Club which is scheduled for June 20. Last year the club tour was through the Berkshires to Boston. At the last meeting of the club five new members were elected, and resolution was adopted requesting the city authorities to instruct its police officers to enforce the observance of the rules of the road upon both drivers of automobiles and horses for the greater safety of the traveling public.

### Newark Club Nominates Officers.

NEWARK, N. J., April 15.—At the last meeting of the board of governors of the New Jersey Automobile and Motor Club, Angus Sinclair was nominated for president of the organization. The Board of Governors also placed in nomination Louis T. Wiss as president to succeed Mr. Sinclair, who has occupied that position for the past year; James C. Coleman as treasurer, H. A. Bonnell as secretary, and Joseph H. Wood, W. F. Kimber and W. C. Crosby as trustees. The regular election of officers will take place at the annual meeting of the club on May 6.

### J. C. McCoy Elected Vice-President of the Aero Club.

NEW YORK, April 15.—At a meeting of the Aero Club of America held last week J. C. McCoy was elected vice-president in place of Homer W. Hedge, who resigned both as vice-president and director. Ten new members were added to the rolls. It was decided to accept the trophy offered by the *Scientific American* for aeroplanes, the first contest to be held at Jamestown.



## THREE FRENCH AEROPLANES HAVE FLOWN

PARIS, April 7.—Santos-Dumont has a serious rival in Léon Delagrangé, the French sculptor with aeronautical tendencies. On the Bagatelle polo ground a few days ago, M. Vuia had interested the idlers by giving displays of short flights with his little machine, when Delagrangé asked Charles Voisin to make a run. There were few people about, the ground being particularly free for experimental flights. A couple of false starts were followed by a flight of about twelve yards to windward, the machine heeling over slightly. To establish equilibrium Charles Voisin fixed a weight on one of the wings, mounted the cage,

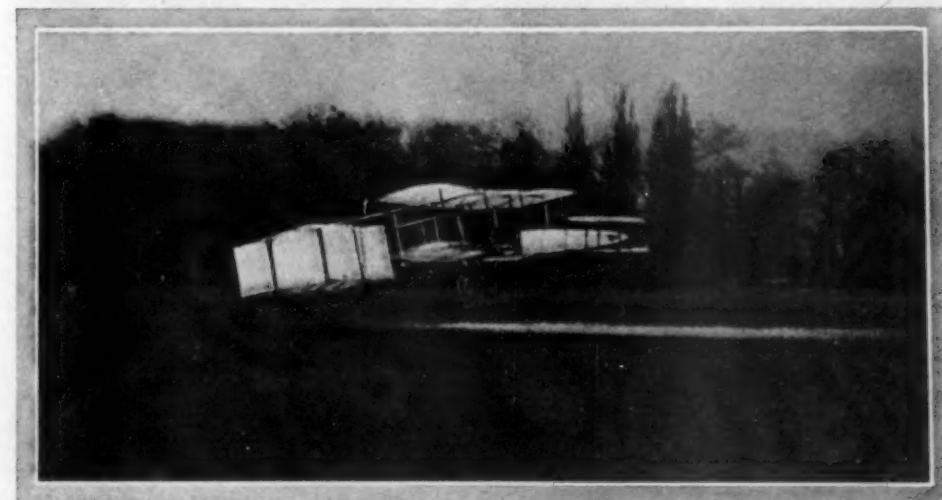
in idleness, but on the end of the third day, the weather being fine and ground fairly hard, preparations were made for what might have been an epoch-making event. Santos-Dumont ordered his machine out, climbed up into the cage, started his motor, and in less time than it takes to tell was rushing down the drill ground. Thirty yards away the *Bird of Prey* rose six or seven feet in the air, rushed on for sixty or seventy yards, rolling dangerously, finally touched the ground with the right wing, capsized and came to a stop. All this had taken place within a few seconds, thrilling seconds for the spectators, who realized the danger to which the air pilot was exposed. Before the little group could reach the wrecked machine Santos-Dumont had extricated himself and shouted out that there was nothing the matter. On a closer examination it was surprising to find that there was so little damage; one wing was broken, a road wheel was smashed, but the motor and transmission were intact. In three or four days all will be again ready and another permanent deputation will be sent from the Aero Club to Saint-Cyr.

It is just possible that the accident may cause Santos-Dumont the loss of the \$10,000 prize, for three other aeroplanists are ready to attempt the kilometer circuit, among them being Léon Delagrangé, whose machine has already flown seventy

yards in excellent style. The prize goes to the one who first fulfils the conditions set for the contest.

### St. Louis Secures Lahm's Famous Balloon.

The *United States*, the balloon in which Lieutenant Lahm won the Gordon Bennett aero cup last year from Paris to the North of England, has been sold to the Aero Club of St. Louis and will be refitted immediately. J. C. McCoy, who has been elected vice-president of the Aero Club of America, and will be the executive head of the organization after Cortland Field Bishop sails for Europe on April 18, expects to try to win the Lahm cup by making a flight of more than 402 miles from St. Louis the latter part of this month. Mr. Hawley will make an ascension soon afterwards.



DELAGRANGÉ AEROPLANE FLYING TO WINDWARD OVER BAGATELLE GROUND, PARIS.

started up the motor, and in a few seconds was running down the field toward the racecourse, wind still ahead. After about one hundred and fifty yards sprint on the ground the machine rose fourteen feet in the air and covered a distance of 65 yards at a speed of thirty-six miles an hour. A cheer rose from the little group of enthusiasts watching the experiments, and Voisin, surprised and delighted, momentarily forgot himself and cut out his ignition. The machine gently descended to Mother Earth, uninjured and ready to begin again. It is certain that had Voisin left his engine running his machine would have traveled to the end of the polo ground in perfect equilibrium. Santos-Dumont, who was present, warmly felicitated Voisin and Léon Delagrangé, and declared that there was nothing whatever to prevent a continuance of the flight. There are now three aeroplanes in France which have made successful public flights: the Santos-Dumont *Bird of Prey*, the Vuia and the Delagrangé machines. This latter, which has been built by the Voisin Frères, of Billancourt, Paris, has a 50-horsepower Antoinette motor with eight cylinders forming V and direct induction feed without carbureter. The superficial area of the machine is 60 square meters, weight 660 pounds, with rear propeller of 90 inches diameter, and a rudder forward.

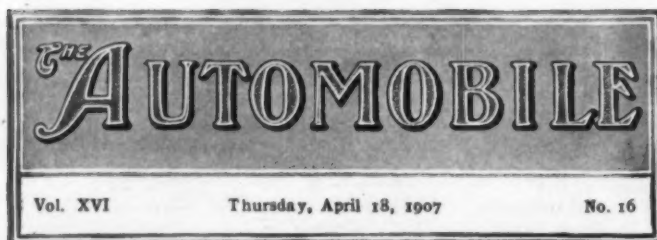
### Santos-Dumont Resolved to Win Aero Club Grand Prix.

Since the breaking of his new aeroplane, Santos-Dumont has brought out again his *No. 14 bis*, with which he won the Archdeacon prize for a flight of 240 yards, and has been making further experiments. Propelled by the 50-horsepower Antoinette motor, the machine has given such satisfaction that its proprietor has decided to attempt to win the \$10,000 Deutsch-Archdeacon prize for the first aeroplane covering a circuit of one kilometer. Three days were fixed, and a deputation was sent from the Aero Club of France to remain at Saint-Cyr from sunrise to sunset, as specified in the regulations. April showers, alternating with March winds, caused the two first days to be passed



HYDROPLANE TESTING AERIAL PROPELLER ON SEINE.

The hydroplane shown in illustration has been built by Bonnemaison of Paris, for making comparative tests of aerial propellers.



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**Need for an Independent Body of Auto Engineers.** Whether the automobile engineers will find satisfactory two distinct organizations, each under commercial and antagonistic restriction, or whether they will meet in the open arena of an independent organization in which the general advancement of automobile engineering without special reference to commercialism is the main object, may have to be determined by the mill of experience. That any organization which brings men together for an interchange of ideas and a discussion of a multitude of undetermined propositions, promoting an advanced engineering production and a uniformity of construction, is of immense value to the industry, needs no sustaining argument. It is equally apparent that the greatest benefit will be derived from the widest publicity of these deliberations, and any attempt at secrecy or exclusion has not only a belittling tendency to the participants, but defeats the whole object of co-operative investigation. Whatever temporary advantage might accrue to a manufacturer whose engineer may have solved one of the problems by himself is more than offset by a lack of knowledge of results secured by others.

The engineers are generally responsible not only for the success of individual enterprise, but for the industry as a whole. A purchaser of one imperfectly constructed automobile may injure the sale of any number of reliable machines. The field of undemonstrated experiment is as yet too large to warrant toleration by the broadminded engineer of any transient secrecy of construction or design, and a comprehensive interchange of ideas will be alike beneficial to the individual enterprise and the industry at large. While engineering sections of corporate combinations are doing much for their individuals numbers, it should

not preclude the establishment of a more comprehensive organization where qualification for membership should be limited only by engineering ability.

The Society of Automobile Engineers has been organized to meet this requirement. It now rests entirely with the engineers to determine if the organization shall survive, and supplement in preponderating degree the two restricted bodies now in existence. There is now need, indeed, for an assured open forum.



**New York's Late Awakening.** It has long been a current saying *ing to the Gasoline Cab.* that none but millionaires could afford to ride in a cab in New York, and though, like many other things, much exaggerated, still it is founded on fact. In no other city of importance in the world are cab fares so high, and, in consequence, cabs and cab riders so few. Paris, with a population of 4,000,000 in round numbers, can boast of something like 10,000 cabs constantly in service, while a like number are in storage according to the season, for the Parisian cab, like the American street car, changes winter and summer. Next to Paris London is the world's greatest cab center, but with a population almost twice as great, it has fewer cabs. New York is scarcely to be mentioned in the same category with many a city of the third or fourth class where cabs are concerned, for it is doubtful if more than a thousand or two are in regular service.

Radically differing traffic conditions coupled with New York's peculiar topography do much to explain this great discrepancy, but these and the vastly higher scale of expenditures prevalent do not shed any light on the fact that it costs five to ten times more to patronize a cab here than it does in either Paris or London, where the rate covers the transportation of one person or two for the same price. Within the past few months New York has had an awakening—she has come to realize of a sudden that the ancient and lumbering aggregations of old storage batteries and badly disaligned running gears that go by the name of electrics were cast on the scrap heap abroad two or three years ago and that light and speedy gasoline-driven cabs have not only taken their place, but also routed the horse cab to a considerable extent. Plans to do likewise here on a truly ambitious scale are now under way, and, if predictions be fulfilled, a year or two hence should see New York's streets populated with more gasoline-driven motor cabs than they have ever boasted of any kind.

It is sincerely to be hoped that the plans in question will not be carried into effect in the procrastinating and long-drawn out manner that has characterized the oft-heralded transformation of the Fifth Avenue stage line.



**Aeronauts Are Becoming Exceedingly Optimistic.** Aeronauts of the heavier-than-air school are in an optimistic frame of mind. Ignoring the alleged flights of the Wright brothers, three aeroplanists, with widely differing types of machines, have made public flights of sufficient length to far remove them from the running jumps which certain critics maintained was all that had ever been accomplished, or could be accomplished by the aeroplane. It is true that the flights have not been of great length—Santos-Dumont holds the record with 240 yards—but it must be remembered that we are working in an entirely new field and that frequently a machine is brought back to earth not because of its inability to remain longer in the air, but because its pilot hesitates to push his experiments to the danger limit. Santos-Dumont and his equally enthusiastic rivals are convinced that the Deutsch-Archdeacon prize for a flight of one kilometer in a circuit will be gained this year. Such a performance would prove irrefutably that the problem of aerial flight has been solved. The internal combustion motor has played, and will continue to play, an important part in this fascinating problem. Without the light multi-cylinder engine which Levavasseur has designed for aerial work, even the genius and intrepidity of a Santos-Dumont would be of little avail.



**NAPIER COMPANY OF AMERICA FAILURE.**

Boston, April 15.—Judge Dodge, of the United States district court, has appointed Arthur J. Farnsworth, vice-president of the Napier Motor Company of America, receiver for the concern, which was petitioned into bankruptcy last week by Boston creditors whose claims amount to about \$1,300. These creditors: the Vacuum Oil Company, whose claim is \$225; Ezra B. Whittier, who holds a claim for \$76, and William H. Wilkinson, whose claim of \$1,009, filed an involuntary petition in bankruptcy against the Napier company, and as the directors had admitted their inability to pay the debts and their willingness to be adjudged bankrupt, the court allowed the petition.

The attorney for the company stated that the receivership proceedings were brought about by reason of the company trying to do too much business on a limited capital. The receiver will make an immediate examination of the assets, and it is likely that the company will be reorganized. The company last week closed its salesroom on Boylston street, and last Wednesday night the large factory in Jamaica Plain was shut down. The company has been in existence several years and is capitalized at \$600,000, half common and half preferred stock. The paid-in capital was \$232,000. The liabilities are said to amount to about \$140,000.

**ADVANCE GUARD LEAVES ON GOLD CUP TOUR.**

To prepare the way for the Gold Cup tourists who will this summer travel 6,000 miles through Europe, Georges Dupuy left New York last Saturday with a 30-horsepower Stearns car provided by Wyckoff, Church & Partridge. The *Vaderland* will land Mr. Dupuy and his American automobile in Antwerp near the end of the month, and from there the party will proceed direct to Paris, leaving a few days later for a run round the entire district to be traversed by the main party. It will be a severe test of the quality of the machine, for the run will have to be accomplished as quickly as possible in order to get back to New York a little time before the departure of the main body.

Mr. Dupuy will prepare a guide book with the itinerary of the trip, having maps and descriptions of the various places of interest to be visited, together with a brief compilation of the idioms and common phrases of speech in the various countries.

Twenty-seven American cars have been nominated for the tour, while in addition to the entrants thirty-one persons have applied for seats in the competing machines. It is expected that there will be a considerable increase before the cars leave New York on June 1.

**PENNSY'S TOLL ROADS MAY BE ABOLISHED.**

PHILADELPHIA, April 15.—On Tuesday night last, without any fuss or feathers, the first step was taken in the Pennsylvania Legislature, now in session at Harrisburg, which may eventuate in the utter abolition of the hated toll-gate throughout the entire State within the next five years. On the evening in question Representative Minehart, of Franklin county, introduced a resolution, which was adopted, ordering the State Highway Department to at once begin inquiries to ascertain the cost of taking over and converting into State roads all turnpike roads on which tolls are now collected.

**SUIT INVOLVING THE UNIVERSAL RIM.**

AKRON, O., April 15.—F. A. Seiberling, as general manager of the Goodyear Tire & Rubber Company and for himself, has begun an important action in the United States Court in Buffalo against the Hartford Rubber Company, the Morgan & Wright Company, and the G & J Tire Company, all claimed to be members of the United States Rubber Company, in which Seiberling alleges infringement of his patent on his Universal rim for detachable tires. Mr. Seiberling claims exclusive rights of the sale by a patent secured by him in 1904. He alleges that this unlawful sale has been going on for a year.

**DENATURED ALCOHOL NOT PROFITABLE AS YET.**

TERRE HAUTE, IND., April 13.—Though the workings of any trust are hard to fathom and too much credence should, in consequence, not be accorded surface indications, it is reported that the Majestic distillery at this place, which was equipped by the alcohol trust to make denatured alcohol on a large scale, is still idle and there is little prospect of its starting up in the near future. The Industrial Company, formed by the trust to place the denatured alcohol on the market, is said to have found that the product cannot compete with gasoline as yet. Another trust plant, the Atlas distillery at Peoria, Ill., which was running in full blast, using 7,000 bushels of corn daily in the making of the denatured product, has been cut down to 2,500 bushels a day. It is thought that the Majestic plant will be allowed to remain idle until fall.

**POPE COMPANY MAY MOVE TOLEDO PLANT.**

TOLEDO, O., April 15.—The story has been floating about this city for the past three or four years that the Pope Motor Car Company contemplates moving elsewhere. Owing to the large investment the company has in this city in the line of buildings but little credence has been placed in the reports, the latest of which is to the effect that the concern would be moved to Elyria, Ohio. Color has been lent to the report on account of the labor troubles the firm has been experiencing for some time past.

Toledo has a chance to get the new plant of the Craig-Toledo Automobile Company, which is operating a plant at Dundee, Mich. Toledo and Detroit at present have the inside track, but the chances are greatly in favor of the latter, for Toledo has allowed several similar opportunities to go by the board.

**FUTURE PLANS OF MORA COMPANY.**

NEWARK, N. Y., April 15.—Owing to increased business, the Mora Motor Car Company has made arrangements for the erection of a modern two-story factory with an area of 30,000 square feet. The old shop will continue to be occupied, awaiting the erection of the new building, and later will be used as a paint shop and testing room. The new company is to be incorporated under the laws of the State of New York with a capital of \$750,000. The officers are: S. H. Mora, of Rochester, president; T. W. Martin, of Newark, vice-president; W. N. Freeman, secretary and treasurer. The board of directors are: J. R. McLaughlin, Canandaigua; T. W. Martin, Frank Garlock, C. L. Crothers, Newark; L. A. Parkhurst, Canandaigua; W. N. Freeman and S. H. Mora, Rochester.

**SHOWS LARGER N. Y. REGISTRATION.**

ALBANY, N. Y., April 15.—Secretary of State Whalen reports for the first quarter of 1907 the following receipts from the fees charged motor vehicle owners for registration and for licenses as compared with the same three months of 1906:

	1906	1907
January .....	\$10,485.06	\$10,477.52
February .....	9,395.07	10,776.50
March .....	3,083.35	4,154.20
Total .....	22,963.48	25,408.22
Increase for quarter..		\$3,444.74

**MACK BROS. MOTOR CAR CO. JOINS A. M. C. M. A.**

The American Motor Car Manufacturers' Association is continuing its strides in the line of increased membership as shown by the announcement that the Mack Bros. Motor Car Co., of Allentown, Pa., had applied for admission and was elected. Two other applications are now in the hands of the membership committee. The Mack Bros. Motor Car Co. makes the Manhattan sightseeing busses which are to be seen in almost every prominent city. It is now devoting a section of its factory to commercial trucks.

## LATEST AUTOMOBILE DOINGS IN BRITAIN

By JOSEPH A. MACKLE.

LONDON, April 10.—Ever since the commencement of the motor industry continental motor manufacturers have found in Britain a ready market for their productions; France in particular having been able to dispose to John Bull of a proportion of its yearly output estimated at nearly fifty per cent. Of late, however, a marked change is apparent. Somewhat dubious of the advantages of a free trade system which enables the foreign manufacturer to dump his productions down without any charge, the Britisher is beginning to blow the "all-British" trumpet. As a result of this tendency the British automobile industry is experiencing a busy time, and prospects are extremely satisfactory. Continental manufacturers have been quick to recognize the trend of fashion, and in several cases have decided to open British factories for the construction of their cars. In this way the recently formed Lorraine De Dietrich, Ltd., has acquired the Ariel Motor Works at Birmingham, and will be turning out Dietrich cars in a few months. In like manner the Holland firm of Spyker, Ltd., and the Belgian Metallurgique Co. expect to have their British factories in full working order by the end of the season. Rumor has indicated the Winton Motor Carriage Co. as another addition to the movement, but except that a representative of the company was said to be seeking out a site for works last Christmas, nothing definite has transpired. Whether this last is correct or not, matters certainly seem to indicate that it will be necessary for any firm contemplating a big British trade to build, or at least to assemble, their cars over here in England.

### Growth of the Motor Union.

The annual meeting of the Motor Union, recently held, has revealed a surprising growth in membership during the past year. Since the previous meeting the affiliation of twenty-four clubs increased the number of members by 3,524, and the addition of over 1,000 individual members had made a grand total of over 14,800 in the Union. While the Royal Automobile Club—the new distinctive title conferred by King Edward on the A. C. G. B. I.—looks after the social and competitive side of motoring, the Union safeguards the legal interests of the youthful industry. Applications for the imposition of speed limits in towns are opposed when this course is desirable, and the well supported arguments offered by the Union have in many cases resulted in the rejection of the application. Appeals against vindictive sentences on motorists are undertaken whenever such proceedings are likely to benefit motorists in general. Further, in view of the importance to the motor industry of a suitable and adequate supply of fuel, a competent committee of the Union has been pursuing work on this question for several months and the report may be expected to contain much valuable information.

The Motor Union Insurance Co. is now firmly established, and the benefits resulting to members have exceeded the original expectations. A further innovation which is expected to be productive of useful results is the provision of special badges which are issued to members for attachment to the dashboard or bonnet of their cars. Members of the Union will by this means be easily identified, and as the badges remain the property of the Union, the committee can demand their return in cases of inconsiderate driving. With the big membership and a balance in hand of over \$8,000, much good work will doubtless be performed during the coming year.

### Makers Will Limit the Shows.

The continuous succession of provincial shows and exhibitions, at which the enterprising manufacturer feels compelled to exhibit, seems likely to die out in future years. From the Olympia show last November till now show chassis and tired attendants have been traveling round the country looking for business which—often enough—was not to be booked. Conditions of business in

the motor industry have undergone a radical change in the past few years, and the greater proportion of business with private customers is now in the hands of local agents who do not need a show to come into contact with their customers—most of whom, indeed, they will know in person. A bright individual over here has just grasped this fact, and the general chorus of approval which has greeted his proposal to boycott provincial shows—with, perhaps, an exception in the case of two or three large cities—argues that the stand attendants will have more leisure time next year. The objection, of course, hardly applies to London shows, and the Agricultural Hall exhibition, which opens its doors to-morrow, can generally be relied upon to bring out some novelties in the car line. With this show the end of the winter session may be said to be marked, and the season of road contests straightway commences.

### No American Cars in Isle of Man Events.

The Isle of Man events are this year to be held in May, commencing the Manx holiday season. Quite an interesting week's racing is provided, commencing with the Tourist Trophy race on Tuesday, May 28. This will be run off on the same course as last year and some thirty cars have already been entered, while several others are expected to rank before the list closes on May 1. No American representative is to be found among the competitors this year.

On the following day a Tourist Trophy race for motorcycles will be run off, and the Heavy Touring car race—with its fuel limitation of one gallon of gasoline for every sixteen miles of road—on the Thursday. The five miles race for the Graphic Cup on Friday will finish an interesting series of events.

The long-distance reliability trials of the Scottish and Irish Automobile Clubs always attract many entries. These popular events will be held, the latter in May and the former at the end of June. The total distance in each case is about 650 miles, and the cars are under continuous official observation till the finish of the trials. Observers of the experienced sort are employed.

### M. MICHELIN INTERVIEWED "AT HOME."

PARIS, April 5.—Home again from his visit to the United States, Edouard Michelin, the tire king, has given his opinion of things in the land of the almighty dollar. Ground for the new factory is already bought, for it is not his intention to make use of an existing building, and work has already begun. A group of French engineers and foremen will be sent over, but American workmen will be employed. The American workmen are active, clever, good workers, and they do not bother with politics. "When the new factory is completed," said Michelin, "we shall avoid the 35 per cent. custom duty and pay our men the American scale for the most skilled workers."

"French workmen who are dissatisfied with home conditions should go out to the United States; the railways especially are hard pressed for men, and the most unskilled mechanic can earn \$4 a day."

Replying to a question on the American invasion of Europe, M. Michelin said he was convinced that there was no need to be afraid of it. "In the United States automobile production doubles from year to year, and still the manufacturers are unable to satisfy the home demand."

"We have been exceedingly well received in the United States; indeed the spirit of the American is such that every stranger setting foot in the country is almost immediately considered a citizen. Already we are classed over there as American producers, and no one looks upon us as invaders. Automobilists are charmed that we have come to give them good tires for their bad roads, and in a short time you will see that 'Michelin boit l'Amerique.'"



## WITH THE MOTOR BOATS AT MONACO

MONTE CARLO, April 5.—When motor boats were giving displays of unseaworthiness, and minor meetings were laughable failures, self-ordained prophets were predicting the collapse of the great annual Monaco auto boat meeting. A few months ago a rather diminutive entry list appeared to corroborate their dismal forecast, but to-day they have been effectively silenced. Seventy-five handsome craft bearing engines made by the most famous motor builders of France, Italy, Germany, England and Switzerland, are united in the gay open-air exhibition

are absent from the meeting, but the proportion of absentees is much lower than in previous exhibitions. Numerically there is an increase of 40 per cent. over last year's motor boat meeting. In engine construction there is little that is new, but in the designing of hulls enormous progress has been made. Not only will the racers be faster than those of last year, but they are more fitted for speedy work in a seaway than ever before. Among the 26-footers France has *La Rapide II*, fitted with a new Panhard & Levassor motor; the *Anadyomene*, with a powerful



ART AND NATURE UNITE TO FORM AN IDEAL EXHIBITION GROUND FOR THE ANNUAL MONACO MEET.

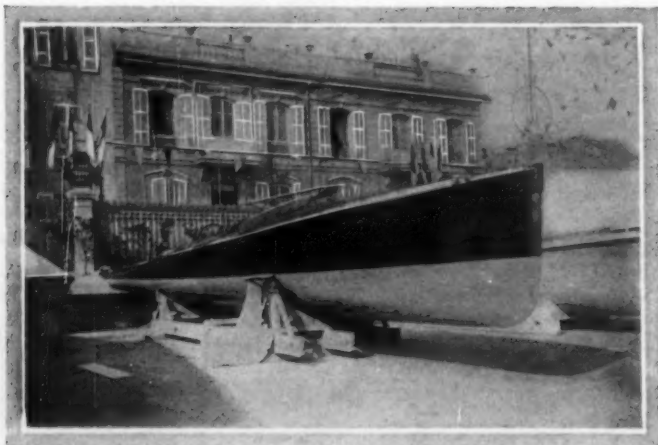
preparatory to being launched in the blue waters of the Mediterranean for their official speed tests.

There is the usual army of sporting enthusiasts, boat builders, engineers and automobilists, a big proportion of the Paris motor world and the élite of the floating population which annually makes Monaco its winter home. For the first time the Prince of Monaco was unable to open the meeting officially, but sent his regrets, and delegated the Governor of the principality to preside over the brilliant ceremony.

The seventy-five boats are divided into four distinct classes: cruisers, racers, vedettes, and hydroplanes. The cruisers are subdivided into four classes with limited length over all and restricted cylinder area; racers are classified up to 26 feet in length and above this length; vedettes are seagoing boats intended for service in the navy or for work in estuaries and river mouths, and hydroplanes are left free from all restrictions either as regards size or engine. A few which signified their intention of competing

Delahaye engine, and *La Mouvette*, engined by Mutel. Italy has *Fiat XV, Itala*, with a 135-horsepower Itala motor, Baron de Cater's *Seasick*, with an Itala motor, hull and engine, being of last year's construction.

Public interest centers in the racers of more than 26 feet length, for the greatest speed is expected from these powerful boats. England again challenges the supremacy of the Latin races on water with a couple of Daimlers owned by Lord Howard de Walden and the *Flying Fish* belonging to Lionel de Rothschild and engined by the Wolseley Company. *Jeanette* is the solitary Italian representant. Germany has *Mercedes D. L.* and France the *Panhard-Tellier* with a Panhard motor, and *New Treffe*, owned by Thurbon and engined by Brasier. *Daimler II* has three six-cylinder 90-horsepower motors, each driving a separate propeller. She is strongly constructed of steel and is looked upon as a particularly fast craft for open sea work. The *Panhard-Tellier*, which should prove the fastest of the fleet in calm water, has two



THE ALL-CONQUERING PANHARD-TELLIER.

Panhard motors used in the Grand Prix cars of last year.

For the first time hydroplanes figure officially in the races, and although only three in number, will doubtless excite interest far in proportion of their numerical value. Comte de Lambert's craft is of particular interest from the fact that it is propelled by a 70-horsepower Antoinette engine driving an aerial propeller. There is practically no skin friction and on calm water the curious craft should be capable of enormous speed. The *Obus-Nautilus* is of quite a different type, consisting of a couple of floats united by a metal frame, one of the floats carrying the engine, the other bearing the pilot, gasoline tank and steering gear. The *Motogodille-Glisser*, presents further distinctive features, its motive power being entirely contained at the rear, and the propeller shaft mounted on a kind of universal joint allowing the screw to be lowered into the water or withdrawn at will. The appliance is largely used in France for small boats, but this is the first time it has been mounted on a hydroplane.

Although there is less public interest in the vedette section, these boats will be examined with more curiosity by seamen than all the fast racers and luxurious cruisers, for they are the utilitarian application of the internal combustion engine to marine work. The French Minister of Marine, M. Thomson, is personally interesting himself in these boats, and has offered a special prize. They are all powerful seagoing craft, few of them fast, but all capable of putting out in half a gale of wind. Cruisers have less that calls for attention than the boats in the other classes. Engines are more protected; hulls are more seaworthy than was the case a few years ago, but there have been no radical changes.

#### Fast Time at Monaco Races.

Cable reports from Monte Carlo announce a number of races postponed on account of bad weather, but very fast time in those

that were run. In the Championship of the Sea, the most important event of the meet, seventeen boats started. *Panhard-Tellier* got ahead from the start and maintained a distinct lead throughout the 200 kilometers, finishing in 3:33:4, or at an average of 34.77 miles an hour, beating the record by 1 hour 17 minutes. *Alf Ertz*, with Fiat engines, was second in 4:46:27; *Ulysee*, with Mors engines, was third; *Flying Fish*, with Wolseley engines, fourth, and the *Adèle*, with Mors motor, was fifth. *Mercedes D. L.* was the only other boat to finish in the eight hours limit. In the 50-kilometer handicap for both cruisers and racers, the *Ressac* finished first, with *Roys d'Ys* second in the cruiser section; *Mercedes D. L.* was first in the racing class, with the British boat *Flying Fish* second, and Baron de Cater's *Seasick* third. In the mile and kilometer races for craft having completed any fifty kilometers event, *Panhard-Tellier* was the fastest, covering the standing mile in 2:9. *La Rapière*, also with a Panhard motor, was second in 2:25. *Flying Fish* took third prize. By this performance the *Panhard-Tellier* secured the Prince of Monaco's cup, valued at \$2,000, in addition to \$1,000 money prize.

The closing day of the Monaco meet witnessed two races of little interest, one being a 25-kilometer contest for all boats and the other a handicap for the same distance. Owing to a rising sea only the British racer *Flying Fish*, owned by Lionel de Rothschild, was able to finish. The weather during the meet has not

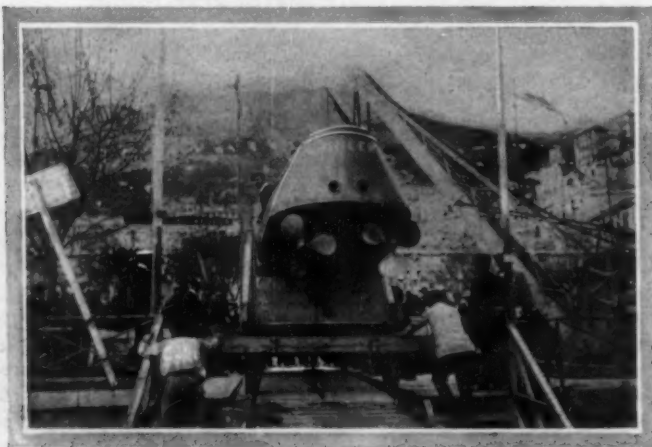


SIX-CYLINDER HOTCHKISS FINISHING LONG WINTER TRIP.

been favorable and the boats have been unable to show all the speed of which they are capable. The *Panhard-Tellier* has been the victor of the meeting, showing herself fastest in both rough and smooth water. Hydroplanes have been the novelty, Comte de Lambert's aerial propeller craft attracting most attention.

#### HOTCHKISS MAKES 6,200-MILE TOUR.

PARIS, April 6.—Having covered 6,200 miles over winter roads, the six-cylinder Hotchkiss, piloted by M. Van Marcke, arrived again at the Place de la Concorde, in front of the Automobile Club, after an absence of fifty-eight days. The test was undertaken to prove the reliability of the car under the worst climatic conditions and over the most difficult roads of France. It must not be supposed that the run was a pleasure trip over billiard-table roads, for the car negotiated the Pyrenees, the Alps, the Vosges mountains, the hilly central district of Auvergne, and the wild roads of Brittany and Finistere. The car was equipped with a side-entrance double-phaeton body and all touring requisites, and carried four passengers. Michelin patent dismountable rims were employed and gave every satisfaction throughout the long test. The illustration shows the arrival of the car on the Place de la Concorde, where the tourists received a hearty welcome from friends and interested persons. Madame Van Marcke, on the right of the car, does not appear to be at all displeased at the return of her husband. THE AUTOMOBILE Paris photographer is seen standing on the right.



STERN VIEW OF THREE-SCREW DAIMLER CRAFT.



## A. L. A. M. TAKES UP TIRE STANDARDIZATION

**F**OLLOWING up the good work that has been accomplished in other essentials, the Mechanical Branch of the Association of Licensed Automobile Manufacturers is now about to turn its attention to the important matter of standardizing tire sizes and weights. As an outline of what is to be done the appended information has been issued and will be found interesting reading:

Tires and their standardization, a problem that has confronted the automobile industry from its inception, is to be the next big work of the Mechanical Branch of the Association of Licensed Automobile Manufacturers. The success of the association's screw standard, its standardized spark plug, its various experiments in metals and oils, and its many educational engine tests will be followed by a series of tire tests, and adoption of standards which will be of material advantage to all motorists and manufacturers.

The tire situation is one that for a long time has not only bothered automobile manufacturers and users, but the tire makers themselves. The peculiar position subjected to tire selection and the number of people through which it had to pass rendered it very confusing. The tire maker, rim maker, automobile manufacturer and consumer. The lack of standard methods as to the quality and size resulted in the tire makers becoming more or less uncertain of the conditions to be imposed upon them by the users.

Under the direction of the Tire Committee, the Mechanical Branch's experts have made several tests in the quality and size of tires to determine what specifications will be adopted and standards recommended which will call for uniformity throughout.

### Comparative Test for Quality.

Tests show that the part of the tire nearest the ground and what is known as tread rubber, to give the best results should be of compound rubber, as pure rubber would not stand the continuous friction caused by coming in contact with the road surface. Near the center of the tire comes the "breaker strip," made up of two or three layers of canvas separating the tread from the next layer of rubber or "cushion stock." The "cushion stock" is usually of the highest class rubber, being only slightly compounded; the next layer towards the center is a five or six-ply fabric, frictioned inside and out. The degree of compounding can be obtained by the specific gravity of the rubber, it being known that the specific gravity of pure rubber is between .950 and .980. The ash, after burning the rubber at a low degree of heat, represents the degree of compounding, independent of the sulphur used for vulcanization. To determine the strength, a strip of rubber is cut from each of the different layers of qualities in the tire, 1-4 inch wide and 1-8 inch thick. One end is gripped and weights are then added to the other end until the strip breaks. A Para rubber shows high strength, and the cheap rubber low strength. In determining the elasticity a similar strip is cut from the tires, 1-4 inch by 1-8 inch, and a measured length of 10 centimeters is taken. The strip is then stretched between nails on a board until the 10 centimeters length becomes 30 centimeters. It is kept in this position for 24 hours, then released, and 10 minutes after release the permanent set

taken. A good rubber has small permanent set; a poor and a cheap rubber has much permanent set.

### Relative Size of Tires.

Considerable discussion has been given to the relative merits of different size tires on front and rear wheels. The size of tires, of course, depends on the weight of a car and its gearing. Many manufacturers have found it to advantage to use a smaller diameter tire on the front wheels than on the rear, and careful investigation seems to prove this to be wise. First, it is much easier to steer, it having a smaller friction area on the ground surface, this makes the wear on the tire, on the whole, considerably less, with chances for punctures decreased. It has less weight in itself and is better proportioned to the weight of the car, which is, of course, heavier in the rear. For high-powered cars, that is, cars required to attain a speed of from 40 to 60 miles an hour, the smaller the diameter of the front tire, the less the danger in case of blow-out or puncture. S. F. Edge, a noted English driver, has made several tests to determine the relative shock caused by punctures, of different size front tires, with the result that with a 3- or 3½-in. tire, a car going 50 miles an hour would be thrown not over 6 or 8 feet, while with an explosion of a 5-in tire, it would be thrown from 30 to 40 feet. Economy and safety call for a smaller diameter front tire. Many do not think it an economy to carry two size tires, but in the long run it will be found more advantageous. For racing purposes a French driver will not use over a 90-mm. tire on the front wheels.

### Adoption of Universal Size.

One of the first recommendations of the Tire Committee of the Mechanical Branch was the elimination of so many sizes of tires, that is, the wheel sizes. Up to the time the Mechanical Branch took hold of this matter, there were 23 sizes of tires in the market, many of which were incapable of doing the maximum amount of work required, owing to their being of wrong proportion, not only for the weight of the car, but the area of the ground surface. Experiments by the Branch have resulted in a reduction of this number and the adoption of 11 sizes:

22x3	30x3	30x3½	32x3½	32x4
34x3½	34x4	34x4½	36x4	36x4½
		36x5		

### Uniformity in Rims and Felly.

A great difficulty that has confronted the automobile manufacturers is the various sizes of rims on the market, thus causing considerable rim-cutting to tires. Many of the rim-makers of single-piece rims had a uniform size diameter and depth of clinch, but not all. Through the efforts of the Branch, the rim-makers have all agreed to a standard size rim, to be inspected and passed by the tire-makers, who will guarantee any tire bearing the rim associations stamp.

Tests and experiments are being made for the standardization of quick detachable tires and demountable rims, results of which, when completed, will prove of considerable advantage to all.

## STANDARD FORMULA FINALLY TO BE ADOPTED

**A**T last the figuring of horsepower has come in for attention, the Mechanical Branch of the Association of Licensed Automobile Manufacturers having taken up the question of establishing a standard formula at its meeting last week. The standards suggested are to consist of a brake test, in connection with a formula to be suggested by the Test Committee. Two units are to be used, the lower being the actual rating from the brake tests, as computed from an indicator at 1,000 feet per minute piston speed, and the higher number to be the maximum horsepower developed from superior workmanship or the results of a better type motor. For example, in a 20 to 24-horsepower motor, the 20 would be the actual horsepower at 1,000 feet per minute piston speed and the 24 the horsepower which would be developed when not under normal conditions.

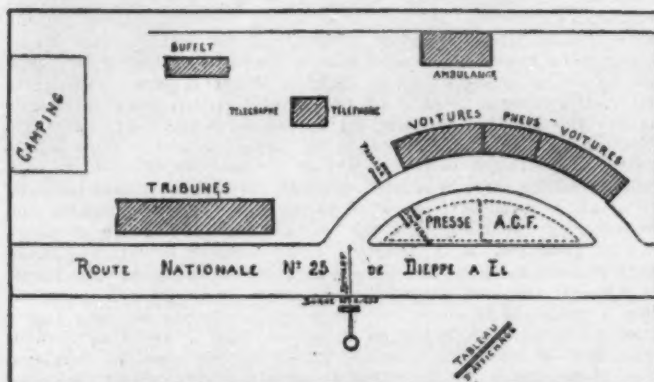
A discussion of alcohol-acetylene as a fuel followed. The growing need of a substitute for gasoline was realized, but

whether alcohol-acetylene combination would supplant the present fuel supply is a problem yet unsolved. Thos. L. White, of Barker & White, exponents of the new fuel, gave a most interesting illustrated talk on the subject. Mr. White predicted that by September 1 alcohol could be obtained at a figure less than 20 cents per gallon, and that in certain places and in quantity carbide could be purchased for this purpose at one cent per pound.

A business meeting of the branch followed the regular session, and three new members were added to the Tire Committee, in order to assist in the furtherance of the standardization of tires which they have adopted. The new members are S. D. Waldon, Packard Motor Car Company; R. B. Jackson, Olds Motor Works; E. F. Russell, Locomobile Company of America. Owing to the amount of work which is being done by the Test Committee it was thought advisable to add another member to this committee, and J. G. Utz, of the Autocar Company, was named.

## GRAND PRIX PREPARATIONS.

PARIS, April 6.—Apostles of the simple life will be delighted to hear that there will be camping facilities at the Grand Prix. Last year the same happy state existed on the Sarthe Circuit, but as the simple livers had to erect their own tents, after clearing the land of timber, cook their own food and roll their own beds, most of them preferred the voluptuousness of an old-fashioned



PLAN OF THE GRAND PRIX GRAND STAND NEAR DIEPPE.

feather bed and a diminutive bowl for morning ablutions. This year conditions will be changed; the Automobile Club of France having decided to rent a large plot of land close to the grandstands, cause a contractor to prepare it, erect tents, and provide meals at a charge which, if not exactly those of a Salvation Army shelter, will be sufficiently reasonable for most of those who have responded to the back-to-nature call. Within easy walking distance is the seashore, so that to the delights of camping can be added the pleasures of sea bathing.

Trial runs continue without interruption on the circuit, nearly every French driver engaged in the Grand Prix having made close acquaintance with the triangular course. This week the full Renault team, with the machines to be used in the race, have done a large amount of speeding under the personal direction of Louis Renault. Szisz declares himself thoroughly satisfied with the course and declares that it will be exceedingly fast when the intended improvements have been carried out. During his speeding Szisz killed a number of crows.

The sketch reproduced herewith shows the arrangement of the grandstands, the tire and automobile stations, the loop road, and the score board. It will be noticed that an island is formed between the loop road and the main track, to be united with the outside of the circuit by a tunnel. On the opposite side of the road will be the popular stands and the scoring board. Grand Prix racers will be started at the point marked on the main track, and the Sporting Commission machines will be sent away later on the loop track.

## OLDSMOBILE "MUDLARK" DOES 2,000-NON-STOP.

PHILADELPHIA, April 15.—At 8:44 o'clock last Tuesday morning, having been 71 hours and 44 minutes on the road, the Oldsmobile *Mudlark* completed the 1,000-miles non-stop run on which it started the previous Saturday morning. At that time the motor was running so quietly and rhythmically that Manager G. Hilton Gantert, of the Motor Shop, who had charge of the test, decided to continue for another thousand miles. The second leg was completed on Thursday night, and still the *Mudlark's* motor was chug-chugging away as merrily as at any stage of the long journey. But the human element in the test—the operators—were "all in." And reluctantly Manager Gantert gave the word to "stop 'er." But after shutting off the spark, just to show that the motor was as full of life as ever, Driver Folbarth, the Oldsmobile factory expert, started it up a half dozen times on compression. And then all hands went home to sleep.

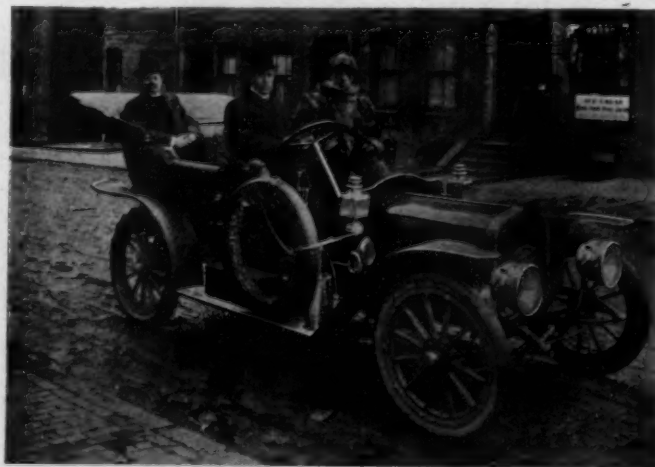
## NEW YORK AUTO CAB SERVICE.

Once more New York is promised an automobile cab service. A new company has recently been organized with the title of the Motor Carriage Company, capitalized at \$1,000,000, under the presidency of G. Winthrop Sands. The New York Cab Company will work in connection with the new organization and will be responsible for the business side of the scheme. The intention is to place three hundred French gasoline cabs, of the type now in use so successfully in Paris and London, in service in New York for private trade only. We are informed by the management of the New York Cab Company that there is no intention to use the taximeter system, but to apply the gasoline cabs entirely to the class of work for which their horse vehicles are now used. G. Winthrop Sands sailed for France this week to make final arrangements with the firms contracting for the supply of the cabs. The vehicles selected will be from the Chenard & Walcker factory, and the Unic make from the Georges Richard factory, and the first delivery will take place about August. The initial batch of machines will have bodies built in Paris by Védrine, but later it is intended to import the chassis only and fit bodies in New York.

The Chenard & Walcker cab has a 16-20-horsepower four-cylinder engine with cylinders cast in pairs and interchangeable mechanical valves on opposite sides. The machine is at present unknown in the United States, but in Europe it has won considerable distinction on account of its reliable construction coupled with low price. Simplicity has been sought in every part, and the machine made as easy to drive and care for as possible—an important feature in an automobile intended for public service. Ignition is by high-tension Simms-Bosch magneto mounted in front of the engine and gear driven off the exhaust camshaft; transmission is through sliding gear, three speeds forward and reverse. Final drive is through a special type of rear live axle.

## BROADWAY TO BE RESTORED TO VERDANCY.

As a result of Governor Hughes' signature appended to the Saxe bill, providing for the rehabilitation of the small parks in Broadway, the latter became a law and New York's most picturesque thoroughfare, which has been denuded of every sign of verdure on its island parks ever since the building of the subway, will again blossom forth. The broad strips between the car tracks that did so much to make Broadway shady and cool in the heat of summer, have been eye sores ever since the work of construction on the underground road was commenced. They have been "nobody's dog" from that day on and served as a dumping ground for all kinds of rubbish. Under the new law they will be placed in charge of the Park Department.



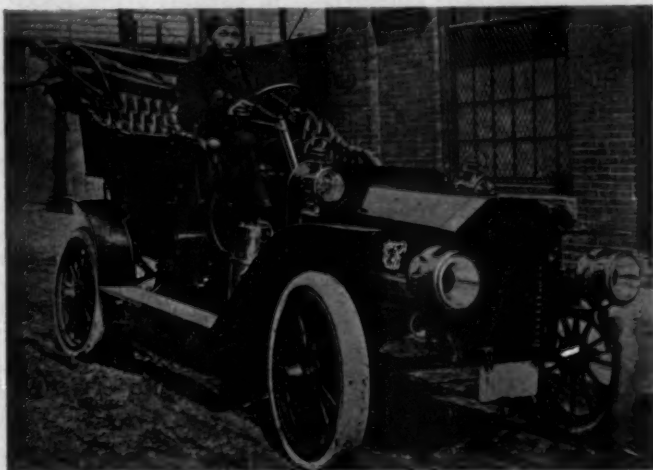
A "FULL-JEWEL" CORBIN AND ITS MANUFACTURER.

Maxwell S. Hart, vice-president and treasurer of the Corbin Motor Vehicle Company, at the wheel.



### DURYEA TO BE CONSULTING ENGINEER.

It seems fitting that Charles E. Duryea, who can rightfully lay claim to the title of being the pioneer automobilist in this country, and who has long been a moving spirit in the American Motor Car Manufacturers' Association, should be appointed to the post of consulting engineer of that organization. Than Mr. Duryea there are few engineers in this country who are better fitted for the position. His experience in making gas engines dates back to 1886, and he first devoted his attention to the automobile in 1891, or almost a decade before the motor vehicle began to loom up as a serious factor in daily life. His victories in the *Times-Herald* race in Chicago, the *Cosmopolitan* race in New York City, and the long-distance race in England in 1896, when his car covered 52 miles and finished an hour ahead of a field representing the best that Europe had to offer, as well as finishing a close second in the Belgian race a few months later, are events that will go down into history. He first began to make cars for the market in 1895. The American Motor Car Manufacturers' Association now consists of 41 members, all of whom will be able to benefit by Mr. Duryea's ripe experience in the field of gas engineering as applied to the automobile. How valuable this makes him is apparent when the number of salient features of the present-day auto due to his creative genius is recalled.



DAVID JAEUNG, BOSTON'S LICENSED CHINESE CHAUFFEUR.

Employed by the Linscott Motor Company, of Boston, and is one of its most expert machinists. He is driving a 1907 Reo.

### BUFFALO TO HAVE AN AUTOBUS LINE.

BUFFALO, N. Y., April 15.—Buffalo is to have an automobile omnibus line. It will not only operate in the main thoroughfares of this city, but will run to Niagara Falls and surrounding towns. Articles of incorporation of the Auto Transportation Company were filed in the County Clerk's office last week. The company is capitalized at \$100,000. Directors are Blinn Yates, Buffalo; Robert W. Day, Buffalo; Fred B. Eberhardt, Buffalo; Uriah L. Upson, Orchard Park; George J. Klopp, Hamburg. Different routes have been planned in the incorporation papers. Aside from Buffalo's main streets, the lines will extend to Niagara Falls, Tonawanda, Lockport, and towns east and south.

### RULING FAVORABLE TO THE CONTINENTAL.

WASHINGTON, D. C., April 15.—Treasury Department regulations of April 28, 1905, providing for the allowance of drawback on Continental tires, imported by the Continental Caoutchouc Company, of New York, and exported with valves of domestic manufacture fitted thereto, have been extended to cover the exportation of tires having outer cases of leather, imported by said firm and fitted with domestic valves, in accordance with the company's sworn statement filed with the collector of customs at New York.



A RAMBLER TOURING PARTY IN FRONT OF THE ALAMO.

The historic structure where Davy Crockett heroically died defending Texas liberty, a magnet for local autoists.

### FUEL TEST GIVES INTERESTING RESULTS.

Under somewhat more favorable conditions and using a combination of gasoline and kerosene on one of the cars instead of kerosene alone, the fuel test undertaken by the Maxwell Motor Car Company from New York to Boston last winter was repeated on the 6th, when three cars of the same maker were run from Trenton to Atlantic City, N. J., a distance of 103 1-2 miles. Two observers were carried in each car. One of the cars used denatured alcohol, another gasoline and the third a combination of kerosene and gasoline, the different fuels being carried in separate tanks and fed in the proportion of three to five.

Trenton was left behind at 10.25 A. M., the cars being driven by H. A. Grant, using alcohol; Charles Fleming, the combination fuel, and Harry Caywood, gasoline, the first-named drivers having acted in the same capacity on the previous run. On weighing in at the end of the run the cars with passengers and baggage up tipped the scales as follows: Alcohol, 2,560 pounds; kerosene, 2,470 pounds, and gasoline, 2,250 pounds, the fuel consumption having been 14 1-2, 8 and 7 gallons, respectively, the combination car using 3 of kerosene and 5 of gasoline.



MISS ROSE STAHL IN HER NEW 26-H.P. DRAGON.

The heroine of "The Chorus Lady" is an ardent automobilist as well as a charming comedienne.

### THE LATEST NEWS FROM TIRETOWN.

AKRON, O., April 15.—Akron tire manufacturers report a wonderful increase in business this spring, and all of them are taxed beyond or to their factory capacity. The Diamond Rubber Company has just let a contract for a new five-story annex of concrete and steel construction extending from one street to another. The Firestone Tire & Rubber Company has added several new lines, so that the products now include tires for all standard rims. The company will double its force of workmen in a few months. The Goodrich company has also increased its capacity greatly.

The Firestone company has just put out a new tire known as the Dual tread, which it is claimed will entirely prevent skidding. It is a large tire and is intended for use on heavy motor cars. The tire has two ridges of rubber projecting from the surface of the tire and running longitudinally, one on each side, their outer edges being three inches apart. These ridges run about a half inch from the body of the tire, and by their action prevent skidding. The tire was invented by a workman in the plant, and is entirely a Firestone product.

J. F. Singleton, advertising manager of the Firestone company, has issued a booklet containing instructions for the care of solid motor tires, and it contains information from an expert which has not yet been published.

Charles W. Harris, formerly with the Consolidated Rubber Tire Company, but recently manager of the Chicago branch of the Pennsylvania Rubber Company, has been in Akron closing a contract with the Adamson Machine Company for a large number of molds to be used by the American Cellular Tire Company in connection with the tire which that concern is about to put on the market. This new cellular tire is neither solid nor pneumatic, and those interested in it claim great possibilities for it. It does not puncture, so that no extra shoes or tubes are required to be carried nor are tools or pumps. It is also claimed to be fully as resilient as pneumatics and to weigh little less. The American Cellular Tire Company will not manufacture the tire, but expect to license it. One Akron company is already negotiating for it.

### COLUMBIA CO.'S AUTOMATIC ELECTRIC BRAKE.

Not the least interesting feature of the Columbia gasoline-electric chassis that is being specialized by the Electric Vehicle Company, Hartford, Conn., is the provision of an auxiliary electric emergency brake made possible by the unique transmission employed. A 45-horsepower gasoline motor direct connected to the revolving field of an electric generator with a dragging or slipping armature is the power plant and elastic clutch of this car. Mounted on the armature shaft of the generator, which runs back to the axle, is the armature of the stationary field motor, into which all the current produced by the slip of the generator field is retransformed into mechanical energy and aids in driving.

The auxiliary electric emergency brakes are embodied in this stationary field motor, and by simply pulling the controller handle to the first rear notch on the control this field and its armature are short circuited and tend to turn as one. As the field is rigidly fastened to the frame of the car, this is impossible, and the driving mechanism locks with a slight slip. The feature which appeals strongly to the more careful autoist who tours hilly country is the automatic retarding brake, which acts in the capacity of the sprag or ratchet. In this automatic sprag is found probably the only brake in existence which goes into operation the moment the car begins to travel backward without any assistance whatsoever from the driver. It is caused by the motor armature on the driving shaft generating current as soon as the armature commences to revolve backward, thus causing a powerful brake, with a slight slip, which will hold as long as the wheels have traction.

Peoria, Ill.—Two new garages now under construction in this city are nearing completion. One is located on East Pine street, and the other on North Main street.

### PITTSBURGH'S SHOW WAS RESULTFUL.

PITTSBURG, PA., April 15.—A success. That sums up the opinion of the first automobile show in Pittsburg. It closed last Saturday night in a blaze of social brilliancy. The show was still more of a success in point of sales. Over \$400,000 worth of cars were actually sold during the week. The Central Automobile Company sold 20 Reo cars and two Grout cars. J. G. Warwick & Co. sold 29 Jewel cars. These were two of the best records made, but only two. There were a dozen agencies which sold half as many cars as they have in any one month of this season. The sales continued up to the very hour of closing, the last purchase, a Winton car, being made after 11 P. M. Saturday by the Hon. James Francis Burke, Congressman from Pittsburg, as a present to his wife. Instead of the show being a loss to exhibitors it made them a lot of money in direct sales as well as in the splendid advertising which they received from it.

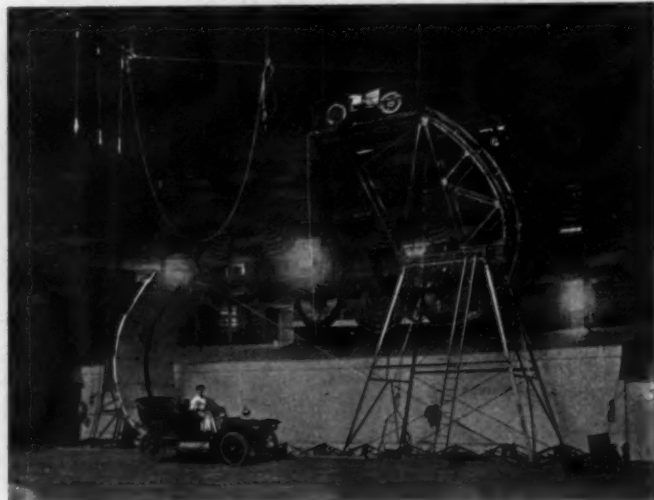
The show was not without its features. One of these was the exhibit of the Standard Automobile Company. It had to borrow cars from its customers to make a showing, as all its Packards and Franklins were sold before the show opened. Another feature of the week was the big hit made by Guenther's orchestra in the new "Pittsburg Automobile Association March."

The show was handicapped by the refusal of the Motor and Accessory Manufacturers to grant a sanction for the exhibit of accessories and parts manufactured by members of the association. Strong pressure was brought to bear to secure this permission, but it was withheld. Pittsburg dealers are still angry.

An automobile show in Pittsburg for next year is an assured fact. If a "first show," coming the same week as the Carnegie Institute festivities and in the midst of weather that would drive anyone but an enthusiastic automobilist indoors, can be made such a success as last week's event, it is believed that with this experience Pittsburg can have next year a show that will be international in its features. The show will likely be held earlier than this year. The committee who managed this show consisted of W. H. LaFountain, Thomas I. Cochrane, and Earl Kiser.

### A STAGE FAVORITE'S USE OF AUTOS.

BALTIMORE, April 12.—That autos are taking a place on the stage will be shown next week at Ford's Opera House. Miss Jessie Busley, who is to play *Nance* in "The Bishop's Carriage," has decided to make her escape in a Baker electric. Miss Busley gained much notice by traveling the Pacific Coast in automobiles. She went from San Francisco to a number of other cities, carrying both company and baggage in autos.



THE "DIP OF DEATH" LADY IN HER AMERICAN MORS. —  
A feature of the Barnum & Bailey Circus, at Madison Square Garden.  
Mrs. Isabella Butler is the heroine of the act.



## BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A total of 18,889 automobiles are in use in Massachusetts according to figures just published by the registration authorities at Boston.

Additions have been made to the Providence branch of the Angier Company, at 9-11 Dorrance street, by the incorporation of the adjoining store. W. B. Richards, formerly of New York City, is the branch manager.

Among the orders received last week for Truffault-Hartford shock absorbers was one for fifty sets from Julius Bindrin, the Bedford avenue dealer in Brooklyn. This year is expected to be a record one for the pioneer device.

Information has been received from Michelin headquarters in France by E. Lamberjack & Co., sole American agents for Michelin tires, that Panhard, Renault, Fiat, Bayard-Clément, Itala, De Dietrich, and Darracq racing machines will use Michelin tires in all national and international races in 1907.

Extensive improvements and enlargements have been made to the wood-working plant of Miller Brothers, of Amesbury, Mass. The firm, which has been engaged in body building for eighteen years, had an output of 2,500 bodies last year, and with the increased facilities will turn out 4,000 bodies in 1907.

The Locomobile Company report that they have shipped from the factory at Bridgeport over 60 per cent. of the 1907 output, and that their sales department has never been in such a healthy condition—a statement which, although general, must be regarded as significant. The record shipment was made recently, \$60,000 worth of Locomobiles leaving the factory in a single day.

Harry Dunn, president of the Fisk Rubber Company, of Chicopee Falls, Mass., is in New York in order to pass on the final details of the building which his company is erecting at Fifty-fifth street and Broadway. The plans for this building are very elaborate, as it will be used as a distributing center for much of the Fisk Company's business. Owing to rapid growth in popularity of the Fisk detachable tire, Harry Fisk, the treasurer of the company, will devote his personal attention to the local branch.

If the intentions of private owners are to be counted on, Columbia cars will figure conspicuously in the big motoring events on the 1907 calendar. Two Columbias are already entered for the American Gold Cup Tour, and assurances are given that at least four machines of this make will participate in the Glidden Tour. Charles F. Barrett, who last year finished the tour with a perfect score in a 24-horsepower Columbia, is undecided whether he will enter the Glidden Tour or the European event.

Amesbury, Mass., is to have a large factory devoted exclusively to the building of metal bodies. A company has been formed under the title of the Amesbury Metal Body Company, and has secured a large, centrally-located factory with 20,000 square feet floor area, which is now being remodeled and machinery installed. The plant will be in operation at the beginning of June. The heads of the new company are J. Albert Davis, formerly of Gray & Davis; James H.

Walker, of Walker Carriage Company; John Foster and Fred England.

Thomas Henderson, vice-president of the Licensed Association of Automobile Manufacturers and of the Winton Motor Carriage Company, has returned to Cleveland from a month's trip through the far west. "I was astonished at the remarkable prosperity of the western country, particularly of the Pacific coast section. San Francisco, now in the making, will be greater and better than ever before. There are wonderful business opportunities on the coast for young men of ability, especially in the sale of automobiles. Motor cars have so emphatically demonstrated their usefulness under severe conditions, in cities, country and mining camps, that sales are made to far western buyers with considerable less effort than in the east, where details rather than general practicability wield an influence out of proportion to their importance. Western buyers lack nothing in shrewdness and they demand the best cars, but what they demand above all else—in their level-headed way—is power and durability."

## NEW AGENCIES ESTABLISHED.

The Craig-Toledo agency for Northern California has been placed with the D'Arcy-Scott Company, 524 Golden Gate avenue, San Francisco. This concern also represents the Dragon car.

Two new distributors have been appointed for the Cleveland by the Cleveland Motor Car Company, as follows: C. W. Poole, 714 Sixth avenue, Seattle, Wash.; Van Automobile Company, 4706-4710 Washington avenue, St. Louis.

The Angier Company, of Boston, has opened a branch for the sale of marine engines and motor boats at 31 Central Wharf, that city, and has secured the agency for Bridgeport motors and Ferro engines. John R. Parker is the new manager.

## PERSONAL TRADE MENTION.

George S. Atwater has resigned the position of sales manager with the Atwood Manufacturing Company, of Amesbury, Mass.

C. L. Lawrance, of the B-L-M Motor Car Company, will sail for Europe April 19 to visit the Krupp steel plant and other European institutions in the interests of his concern.

Otis R. Cook, formerly of Cleveland, and for a dozen years traveling agent for the B. F. Goodrich Company, has taken a position with the Firestone Tire & Rubber Company, and will travel between Buffalo and Toledo.

Theodore Goetz, for some years connected with the R. E. Dietz Company in its automobile lamp department; has joined the selling force of the Witherbee Igniter Company. W. W. Robinson has joined the engineering force of the Witherbee Company as mechanical engineer.

E. C. Angell has resigned as general superintendent of the Jones Speedometer to accept the general management of the Winchester Speedometer

Company, in which corporation he has a large interest as a stockholder. Mr. Angell has been long known to the manufacturing world.

John J. Coakley, a former Boston newspaper man, well known as a writer on automobile topics, has taken charge of the publicity and advertising department of the Babcock Electric Carriage Company, of Buffalo, N. Y. C. H. Tyler, for six years eastern representative of the National Motor Vehicle Company, has joined the selling force of the Babcock Company.

Charles Schmidt, the designer of the 1907 cars manufactured by the Peerless Motor Car Company, of Cleveland, O., sailed on *La Lorraine* April 4 for a trip abroad. Mr. Schmidt expects to be gone about six weeks, and will visit all the important European automobile manufacturing, renewing acquaintances and studying new foreign methods of construction and materials used.

James K. Christie, who recently withdrew from the firm of Palmer & Christie, importers, has joined the forces of the American Locomotive Automobile Company, his position being designated by General Manager Joyce as "manager city sales." Mr. Christie's identification with the automobile business dates back to 1900, when he was selling steamers. He has been in the importing line since 1904.

H. A. Williams, 1459 East Eighty-eighth street, Cleveland, O., inventor and formerly manager of the Williams New Electric car and New Gasoline car, has severed his connection with the Williams Electric Vehicle Company, the reason given being a stockholders' disagreement. Mr. Williams expects to organize a new company or join some other concern which will manufacture his electric car.

## NEW BUSINESS ENTERPRISES.

Charleston, S. C.—The Automobile & Marine Motor Company has been incorporated by N. S. Lea as president, J. C. D. Schroeder as secretary, and W. Orrin Bee as manager. The company has the agency for the Ford and the Detroit, and will carry a complete line of sundries. Located at 9 George street, the company occupies a two-story building, 40 feet wide by 160 feet deep.

New York City.—The Imported Car Repair Company will install in the Motor Mart at Broadway and Sixty-second street a machine shop for the purpose of repairing the highest grades of automobiles. A specialty will be made of magnetto work. The officers of the company are: President, M. S. Gilmer; secretary, R. B. Whitman; treasurer and manager, J. T. Gilmer; chief mechanic, C. W. Adams.

Goshen, Ind.—Leading business men of this city have organized the Oswald Motor Company for the purpose of manufacturing gasoline automobile and marine motors, and will place on the market single-cylinder and double-cylinder types and also a 40-horsepower motor. The officers of the corporation are as follows: President, Elmer Newell; secretary, Charles Shoup; treasurer, O. M. Curtis; sales manager, W. T. Miller.

**St. Louis, Mo.**—The D. L. G. Auto Company, of 3032 Olive street, is being organized by A. L. Dyke to manufacture the Dyke-Leibert & Givens six-cylinder "unit power plant" automobile. The features of the new car as announced are the improved unit power plant, consisting of six-cylinder engine, 4 by 4 1-2, with multiple disk clutch and selective transmission housed in unit, also the absence of coil batteries, and high-tension magneto used instead. The company expects to have a model completed in sixty days, and a run will be made from St. Louis to New York without the use of battery or coil.

**Jersey City, N. J.**—The Acetylene Specialty Company, with a capital stock of \$100,000, has been incorporated to manufacture small acetylene cylinders (Parisian style) for automobiles and other purposes under the name "Stereo;" also a new high candlepower acetylene incandescent burner for auto lamps. The incorporators include Eugene Bournonville, ex-chief engineer of the Commercial Acetylene Company, and E. Thomey-Cavalleris, president of the Acetylene Gas Illuminating Company, of New York. The factory will be located in this city and the general offices of the company at 105 Walker street, New York City.

#### NEW TRADE PUBLICATIONS.

Air-cooling is naturally the theme of the Frayer Miller 1907 catalogue, which has just made its appearance. For the coming season the firm has produced a 50-horsepower model of long wheel base and seating accommodation for seven passengers. This is fully described in the catalogue and the distinctive features of the Frayer-Miller system of cooling by a blast of cold air is explained by text and drawings. A copy of the booklet can be obtained from the Oscar Lear Automobile Company, Columbus, O.

Though they are both self-propelled, there is not much similarity between a road roller and an automobile. Yet road rollers make good roads; good roads make automobilists happy. The good road makers of the Monarch Road Roller Company, Groton, Tompkins County, New York, are presented to the public in a new catalogue issued by that body and containing many half-tone illustrations and much descriptive text. Street cleaners, water wagons and portable engines also find a place in the new publication.

"Expert Testimony" will be read with interest by all automobilists. Extracts from the reports of the correspondents of the leading automobile journals in America on the annual automobile shows of London, Paris and New York are given in the book, each one being followed by a few words of text showing how the Lozier machines conform to the best ideas to be found in these great exhibitions. A word to the Lozier Motor Company, Fifty-fifth street and Broadway, will bring "Expert Testimony" to any who desire it.

Artistically designed, well printed and elegantly bound, the new Rambler catalogue is in every respect a pleasing production. Panels and vignettes of those wayside scenes that every true automobilist is always delighted to find, contrast harmoniously with the half-tones of complete cars, chassis and mechanical parts of the 1907 Rambler output. There is plenty of text also, and

not a feature of the machine but is thoroughly described. The catalogue can be obtained from the Thomas B. Jeffery & Company main office at Kenosha, Wis., or from their numerous agencies.

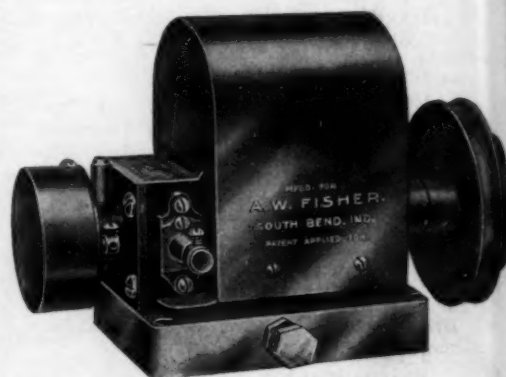
"Instructions and Directions for Operating the Great Smith Car," published by the Smith Auto Company, Topeka, Kansas, is a voluminous work of 64 large pages, containing a quantity of useful information. Dealing first with general considerations of the automobile, the work passes progressively through the entire mechanical field of the internal-combustion engine, clearly explaining many of those principles without a knowledge of which it is almost impossible to successfully operate an automobile. A separate chapter deals with the practical operation of an automobile under all conditions, from cranking the engine to difficult driving on the heaviest of roads. Common ignition troubles, attention to tires, grinding valves, attention to lubrication, water circulation and other matters which every automobilist must learn are among the subjects on which the instruction book gives advice.

Manufacturers have learned that a large amount of a customer's satisfaction lies in his or her ability to operate and care for a motor car properly. The Peerless Motor Car Company has issued a most interesting and attractive pamphlet, "The Peerless Instruction Book," which explains in a clear and concise manner the detailed construction and operation of this company's cars. Of course, it is impossible for any book to solve in advance all motoring problems that an operator will encounter. But this description and the general hints contained in it will give a new operator a valuable foundation on which to build further knowledge of the more minute details of a car, and at the same time form a safeguard against possible costly errors in care and operation. The book starts with a description of the lubricating, gasoline ignition and cooling systems, then giving description of the motor, transmission, brakes, etc., and closing with some valuable hints on proper operation, common sources of trouble and, lastly, with a list entitled "A Few Don'ts."

#### INFORMATION FOR BUYERS.

**Storage Battery Charger.**—The object of the storage battery charger just put on the market by the A. W. Fisher Company, of South Bend, Indiana, is to keep an ignition storage battery charged while the engine is running. It is installed on the motor, to be driven either by belt or by friction pulley against the flywheel, and generates current which is stored in the battery, taking the place of that which is being used by the coils, thereby keeping the battery charged constantly. The plan contemplates using current from the battery at all times, the charger simply supplying what is needed to keep the battery charged. This amount is arrived at in the construction of the machine, the output of the armature not being sufficient to injure the battery in any way, but enough to take care of the consumption by the coils. It is provided with a patented mechanical automatic circuit-breaker, or switch, so constructed that it breaks the circuit between the battery and charger when the speed falls below that at which it is generating current, and prevents the current from the battery leaking back through the machine and exhausting the

battery. This cut-out, which is a part of the charger, operates entirely by speed and does not depend upon the electrical output of the generator. The entire machine weighs but 12 pounds and measures



FISHER'S STORAGE BATTERY CHARGER.

8 1-2 inches long by 5 inches high by 4 1-2 inches wide. Any standard 6-volt battery may be used in connection with this charger. The machine is sold under a positive guaranty that it will keep an ignition storage battery charged and ready for service at all times.

**National Speed Indicator.**—Driven from the road wheel by a flexible shaft in the usual manner, the National speed indicator is actuated by a vertical ball governor mounted in ball bearings and working against a balanced spring, this principle insuring a uniform scale and accurate reading. The scale is nine inches long and is claimed to be the longest on the market; the needle is as steady as a clock hand and the face so open that it can be read in a very dim light. All the moving parts are of steel,



NATIONAL INDICATOR AND FIXTURES.

the shaft cases are of flexible brass lined with a special steel lining, and all attachments are made strong to stand hard

A Veeder odometer inclosed in the case and reading through the dial gives the season's mileage; there is also a resetting trio register for 100 miles and repeat. The National indicator is manufactured by William Herbert Jones, Newton, Mass.